Alerta Tecnológico

INSTITUTO NACIONAL DA PROPRIEDADE INDUSTRIAL

Pedidos de Patentes sobre Biodiesel

Pedidos Publicados no 2º Semestre de 2008

Diretoria de Articulação e Informação Tecnológica – Dart
Centro de Divulgação, Documentação e Informação Tecnológica-Cedin
Divisão de Estudos e Programas – Diespro

Nº 2 – Junho de 2009

INSTITUTO NACIONAL DA PROPRIEDADE INDUSTRIAL - INPI

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ALERTA TECNOLÓGICO

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O Centro de Divulgação, Documentação e Informação Tecnológica (CEDIN), subordinado à Diretoria de Articulação e Informação Tecnológica (DART), mantém um acervo com a descrição dos pedidos de patente e de registro de desenhos industriais. Uma de suas atribuições é divulgar e disseminar a utilização destas informações bibliográficas e técnicas. Para tanto, o CEDIN dispõe da Divisão de Estudos e Programas – DIESPRO, cuja incumbência é elaborar publicações fundamentadas, essencialmente, em informações extraídas de documentos de patente.

A patente é uma importante fonte formal de informação, por meio da qual pode-se ter acesso a detalhes técnicos de invenções que, em alguns casos, não são descritos em livros nem em artigos técnicos.

O objetivo desta publicação, de periodicidade semestral, é o de alertar sobre os depositantes mais expressivos em determinado período, os países onde o primeiro depósito foi solicitado (país de prioridade), as áreas tecnológicas mais solicitadas e, divulgar os títulos ou resumos dos pedidos de patentes publicados mundialmente em determinado período permitindo, desta forma, a atualização periódica de seu público alvo.

Esta publicação consiste de:

[1] Foram selecionados somente os primeiros documentos publicados de cada uma das famílias de patente. O conceito de família de patentes é bastante diversificado e varia de acordo com a base de dados na qual os documentos estão indexados. Em linhas gerais, todos os pedidos de patentes pertencentes a uma mesma família têm pelo menos um número de prioridade em comum.

[2] Conforme estabelecido pela Convenção de Paris (CUP) em seu Art. 4º, o primeiro pedido de patente depositado em um dos países membros da Convenção serve de base para depósitos subseqüentes relacionados à mesma matéria, efetuados pelo mesmo depositante ou por seus sucessores legais. Tem-se assim, o **Direito de Prioridade**. O prazo para exercer tal direito é de 12 meses, para invenção e modelo de utilidade. Ver art. 16, da Lei da Propriedade Industrial (LPI), nº 9.279/96 – disponível em www.inpi.gov.br.

Mais detalhes sobre cada pedido, bem como, cópia do documento completo podem ser obtidos nas seguintes bases de patente disponíveis gratuitamente na Internet:

1. Base Brasileira de Pedidos de Patente[3]: http://www.inpi.gov.br
2. Base do Escritório Europeu de Patentes[4]: http://ep.espacenet.com
3. Base do Escritório Americano de Patentes[5]: http://uspto.gov

Caso haja interesse em se conhecer o depósito de patente brasileiro correspondente (família do pedido de patente[1]), para algum(ns) dos pedidos de patente estrangeiros listados no Anexo I, sugere-se uma busca de família do mesmo. Neste caso, o Centro de Documentação do INPI – Cedin informará os procedimentos a serem seguidos, por meio do endereço abaixo.

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As cópias integrais dos pedidos de patente de interesse podem ser solicitadas por meio do endereço copdocpat@inpi.gov.br ou, por correio postal ao endereço acima.

[3] Esta base contém somente pedidos de patente depositados e publicados no Brasil a partir de 1982.
[4] Contêm pedidos de patente depositados e publicados em mais de 70 países.
[5] Contêm somente pedidos depositados e publicados nos Estados Unidos.

PEDIDOS DE PATENTES EM BIODIESEL

O Governo Federal lançou, em dezembro de 2004, o Programa Nacional da Produção e Uso de Biodiesel – PNPB. Este programa visa implementar de forma sustentável a produção e o uso do biodiesel contemplando a diversidade de oleaginosas, a garantia de suprimento, a qualidade do novo combustível e uma política de inclusão social.[6]

No âmbito do PNPB, a Lei nº 11.097, de 13 de janeiro de 2005, introduziu o biodiesel na matriz energética brasileira e fixou um percentual mínimo obrigatório de 2% (B2), em volume, de adição de biodiesel ao óleo diesel comercializado ao consumidor final a partir de janeiro de 2008. Essa mesma Lei determinou que até janeiro de 2013 esse percentual seria de 5% .

O percentual obrigatório de mistura de biodiesel no diesel mineral acarreta em um aumento significativo da demanda por este combustível no Brasil. Em conseqüência disso a produção brasileira aumenta para suprir esta demanda que resulta na criação de diversas novas plantas de produção. A P&D na área torna se imprescindível para o desenvolvimento de tecnologias relacionadas ao tema, visando ao desenvolvimento de produtos mais barato e de melhor qualidade.

O Governo Federal, por meio do BNDES, FINEP e outras instituições, tem fomentado a P&D e produção de biodiesel. Além desse esforço, foi criada a Rede Brasileira de Tecnologia de Biodiesel que visa tanto à articulação dos diversos atores envolvidos na P&D e na produção de biodiesel quanto à identificação e eliminação de gargalos tecnológicos que venham a surgir durante a evolução do Programa Nacional em questão.[6]

Tendo em vista o atual cenário de apoio do governo à produção e à P&D nos diversos elos da cadeia do biodiesel, o INPI vem, por meio do CEDIN, colaborar com o PNPB, facilitando o acesso ao público interessado às informações existentes sobre biodiesel no banco de patentes do INPI.

O objetivo desse alerta consiste em divulgar, a cada semestre, os pedidos de patente publicados que se referem a biodiesel. Estes podem ser de novos

[6] PORTAL DO BIODIESEL, [200-]. Disponível em: < http://www.biodiesel.gov.br >. Acesso em: Nov 2007.

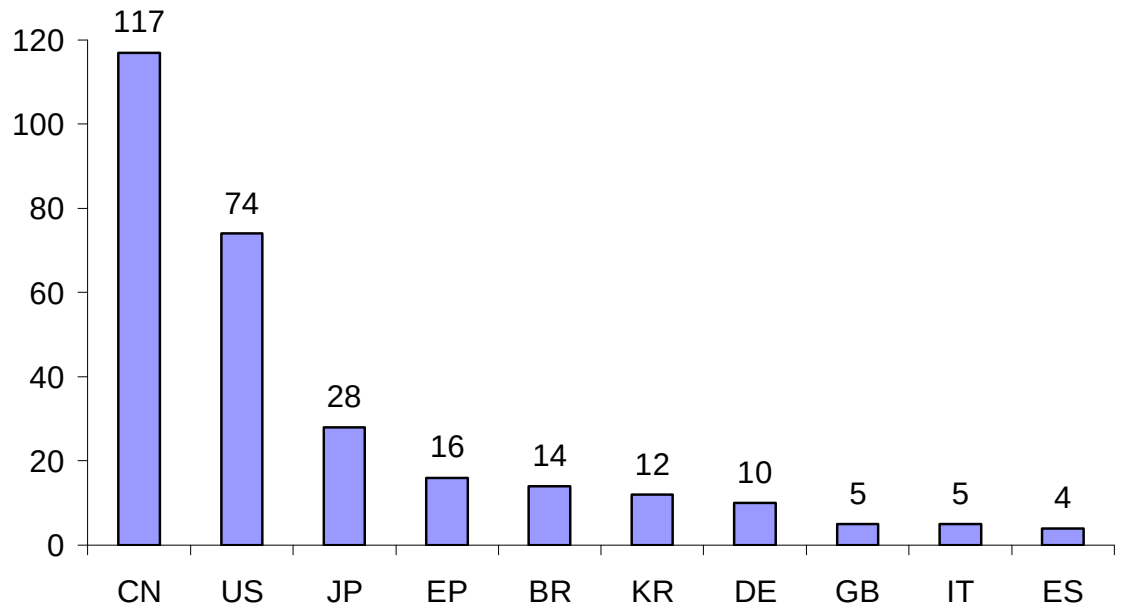
processos de produção de biodiesel, catalisadores para produção de biodiesel, aditivos para biodiesel, uso dos subprodutos da produção de biodiesel, entre outros assuntos relacionados ao tema.

Para o presente levantamento, foram selecionados os documentos de patente contendo em seu título ou resumo o termo **biodiesel** ou termos relacionados à estrutura química do biodiesel (como, por exemplo, os termos "***alquil éster de ácidos graxos***", "***etil éster de ácido graxo***", "***metil éster de ácido graxo***").

Resultados

O gráfico 1 permite a identificação dos países de prioridade (a lista com os códigos dos países está disponível no Anexo I) dos documentos recuperados no período e a ocorrência em cada país.

Gráfico nº 1: Países de Prioridade dos Documentos Recuperados em Nível Mundial x Nº de Documentos



Fonte: Elaboração própria a partir da base de dados EPODOC[7]

7 Esta base pertence ao banco de dados EPOQUE que é disponibilizado ao INPI, via acesso remoto, pelo Escritório Europeu de Patentes.

De acordo com o gráfico 1 os principais países de prioridade são:

CN – China,

US – Estados Unidos da América,

JP – Japão,

EP – Escritório Europeu de Patentes

BR – Brasil e

KR - Coréia

DE – Alemanha

GB – Reino Unido da Inglaterra

IT - Itália

ES - Espanha

Na tabela 1, a seguir, são identificados os depositantes com maior número de pedidos de patente publicados no período e seus respectivos países de prioridade.

Tabela 1: Relação dos principais depositantes, seus respectivos países de prioridade e nº de pedidos de patentes publicados no 2º semestre de 2008

Nome do Depositante	Prioridade	Total de Documentos
UNIV EAST CHINA NORMAL [CN]	CN	10
UNIV TSINGHUA [CN]	CN	5
UNIV NANCHANG [CN]	CN	5
UNIV ZHEJIANG [CN]	CN	4
PETROLEO BRASILEIRO SA [BR]	BR	4
HENAN RUNHENG BIOLOG SOURCE CO [CN]	CN	4
UNIV SOUTHEAST [CN]	CN	3
DENGLONG CHEN [CN]	CN	3
UNIV DALIAN TECH [CN]	CN	3
UNIV HUAZHONG AGRICULTURAL [CN]	CN	3
NIPPON OIL CORP [JP]	JP	3
NIPPON CATALYTIC CHEM IND [JP]	JP	3

Fonte: Elaboração própria a partir da base de dados EPODOC

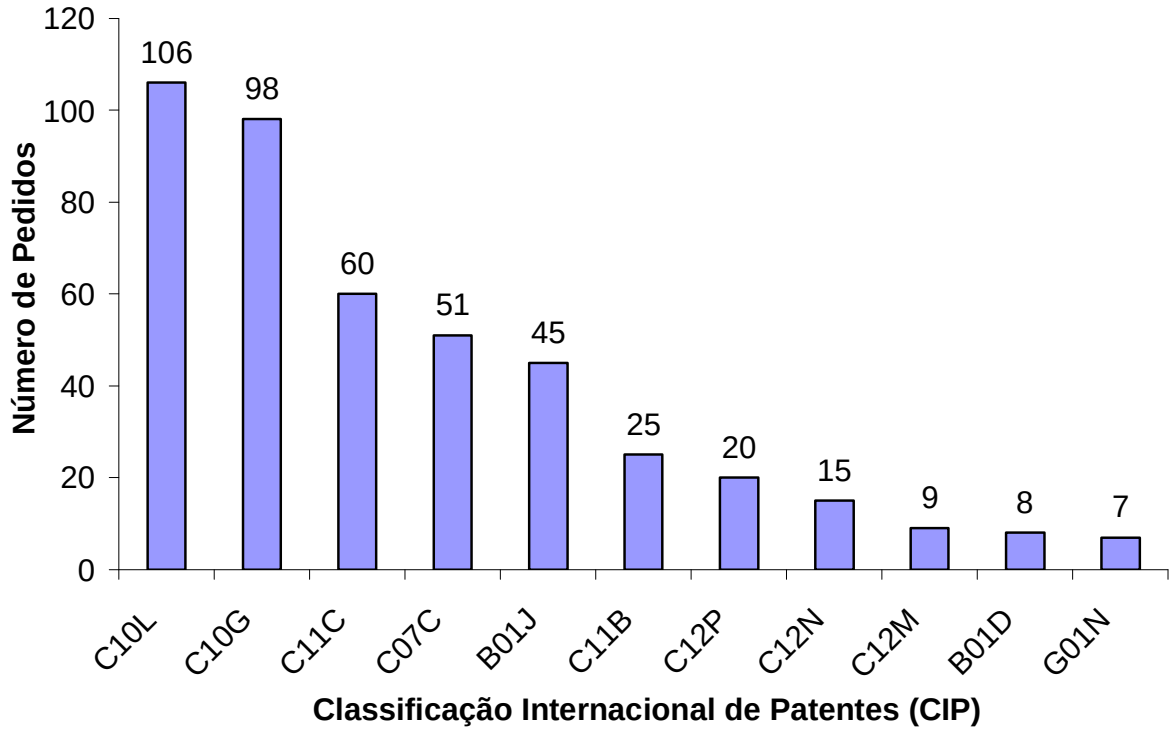
O sistema da Classificação Internacional de Patentes resultou dos esforços conjuntos de órgãos de propriedade industrial de vários países, com o objetivo de dispor, de forma organizada e padronizada, os documentos de patente, a fim de facilitar o acesso (busca) às informações tecnológicas e legais contidas nesses documentos.O Acordo de Estrasburgo relativo à Classificação Internacional de Patentes, concluído em 1971, entrou em vigor em 1975 e é administrado pela Organização Mundial da Propriedade Intelectual (OMPI). Qualquer país membro da Convenção da União de Paris pode se tornar membro do Acordo de Estrasburgo.

Em julho de 2008, 58 Estados eram parte do Acordo de Estrasburgo, no entanto mais de 100 escritórios nacionais, 4 escritórios regionais e a Secretaria da OMPI, atuando como escritório receptor do Tratado de Cooperação em Patentes (PCT), também utilizavam a Classificação Internacional de Patentes (CIP).

A edição atual da CIP (8ª edição) entrou em vigor em 01/01/2006 e está disponível no *site* da OMPI: http://www.wipo.int/classifications/ipc/ e no *site* do INPI: http://pesquisa.inpi.gov.br/ipc/index.php .

No gráfico 2 são apresentadas as principais classificações contidas nos documentos encontrados na pesquisa. Estas classificações permitem o monitoramento das tecnologias relacionadas ao tema, descritas nos pedidos de patente publicados no período.

Gráfico 2: Número de Pedidos de Patentes Publicados sobre tecnologias relativas ao Biodiesel (2º semestre de 2008) x Classificação Internacional de Patentes (CIP)



Fonte: Elaboração própria a partir da base de dados EPODOC

C10L - Combustíveis não incluídos em outro local**;** gás natural**;** gás natural de sintético obtido por processos não abrangidos pelas subclasses C10G ou C10K**;** gás liquefeito de petróleo**;** uso de aditivos em combustíveis ou ao fogo**;** acendedores de fogo.

C10G - Craqueamento de óleos hidrocarbonetos**;** produção de misturas hidrocarbonetos líquidos, por ex., por hidrogenação destrutiva, oligomerização, polimerização recuperação de óleos hidrocarbonetos de óleo de xisto, areia oleaginosa ou gases**;** refino de misturas principalmente consistindo de hidrocarboneto**;** reforma de nafta**;** ceras minerais.

C11C - Ácidos graxos derivados de gorduras, óleos ou ceras**;** velas**;** gorduras, óleos ou ácidos graxos resultantes da modificação química de gorduras, óleos, ou ácidos graxos obtidos dos mesmos.

C07C - Compostos acíclicos ou carbocíclicos

B01J - Processos químicos ou físicos, por ex., catálise, química coloidal**;** aparelhos pertinentes aos mesmos.

C11B - Produção, por ex., por compressão de matérias-primas ou por extração a partir de substancias de rejeitos, refinação ou preservação de óleos, substancias graxas, por ex., lanolina, óleos graxos ou ceras**;** óleos essenciais**;** perfumes.

C12P - Processos de fermentação ou processos que utilizem enzimas para sintetizar uma composição ou composto químico desejado ou para separar isômeros óticos de uma mistura racêmica.

C12N - Micro-organismos ou enzimas**;** suas composições**;** propagação, preservação, ou manutenção de micro-organismos ou tecido**;** engenharia genética ou de mutações**;** meios de cultura.

C12M - Aparelhos para enzimologia ou microbiologia

B01D - Separação

G01N - Investigação ou análise dos materiais pela determinação de suas propriedades químicas ou físicas.

Tabela 2:

Lista com dados bibliográficos dos pedidos de patente publicados, no 2º semestre de 2008.

(Por ordem alfabética do nome do depositante)

Número de Publicação	Prioridade(s	Depositante	Classificação Internacional	Titulo ou Resumo
WO2008080495	DE200610062045 20061229	AB ENZYMES GMBH [DE]; KOEHLER JOERG [DE]; MARSCHNER VOLKER [DE]; WINTER BRUNO [DE]	C11B1/02	The invention relates to a method for recovering oil from plant seeds, characterized in that a) an aqueous solution, containing one or more cellulolytic, and/or lipolytic, and/or pectinolytic, and/or proteolytic enzyme or enzymes, and or phytases is sprayed onto the seed material; b) the seed material so obtained is supplied in a known manner to a one-step or multistep pressing which optionally is coupled to an extraction step; and c) the oil is recovered in a known manner and optionally processed further; and the use of the method, particularly for the production of food oil or biodiesel .
US2008163543	US20080969699 20080104; US20070883529P 20070105	ABHARI RAMIN [US]; HAVLIK PETER [US]	C10L1/18	A process for producing a diesel fuel of biological origin. The process includes a biological component to be trans-esterified into a fatty acid alkyl ester. A fraction of the fatty acid alkyl ester is hydrodeoxygenated and hydroisomerized to produce an iso-paraffinic hydrocarbon. The fatty acid alkyl ester and the iso-paraffin components are combined into a middle distillate product suitable for direct use as diesel or jet fuel.
EP1968930	WO2006AU01827 20061201; US20050597444P 20051202	ACQUA INTERNAT GROUP INC [AU]	C07C67/02	Method and apparatus for manufacturing and purifying bio -diesel
US2008182768	US20070960949 20071220; US20070887539P 20070131	AFTON CHEMICAL CORPORATION [US]	C10M169/00; F01M11/00	A diesel engine operating on a fuel containing from about 5 to about 100 wt. % bio -diesel components and being lubricated with a lubricating oil composition including a major amount of oil of lubricating viscosity, and a minor amount of at least one highly grafted, multi-functional olefin copolymer. The olefin copolymer is made by reacting an acylating agent with an olefin copolymer having a number average molecular weight greater than about 1,000 in the present of a free radical initiator to provide an acylated olefin copolymer having a degree of grafting (DOG) of the acylating agent on the olefin copolymer of at least 0.5 wt. %, and reacting the acylated olefin copolymer with an amine to provide the highly grafted, multi-functional olefin copolymer. As used, the highly grafted, multi-functional olefin copolymer is effective to reduce a viscosity increase in the lubricating oil composition for the engine.

Número de Publicação	Prioridade(s	Depositante	Classificação Internacional	Titulo ou Resumo
FR2917422	FR20070055753 20070614	AIR LIQUIDE [FR]	C11B1/10; A23L1/30; A61K36/00; C10L1/02; C11B3/00	Extraction of plant oil from extraction material, where sub-critical carbon dioxide is used as a solvent throughout or part of the extraction, is claimed.
FR2917420	FR20070055752 20070614	AIR LIQUIDE [FR]	C10L1/02; B01D3/00; B01D8/00; B01D15/00; C11C3/10	Dispositif et procede d'elimination d'un sous-produit du biodiesel, procede de purification du biodiesel issu d'une etape de transesterification ainsi que d'une installation de production de biodiesel incluant .
WO2008121526	US20070908551P 20070328; US20070908546P 20070328	ALBEMARLE CORP [US]; GATTO VINCENT J [US]; ZHAO GANGKAI [US]; SCHNELLER EMILY [US]	C10L1/14; C10L1/02	This invention provides stabilized biodiesels comprising (1) biodiesel , such as fatty acid methyl ester (FAME), (2) mono- or bis-hindered phenolic derived from 2,6-di-tert- butylphenol, and (3) N,N'-di-substituted para-phenylene diamine. Also methods of stabilizing biodiesel are provided involving adding (2) and (3) to (1).
WO2008127617	US20070923400P 20070413; US20070997218P 20071002	ALLTECH ASSOCIATES INC [US]; GAITA ROMULUS [US]; YOUNG DONNA [US]	B01D15/08; G01N30/02; G01N30/88	Methods and apparatus for analyzing a sample, such as a biodiesel fuel sample, are disclosed. The method comprises the steps of determining individual amounts (i) mono-, (ii) di- and (iii) tri-acylglycerols in the biodiesel fuel sample using a liquid chromatography device in combination with a detector and, based on the individual amounts of respective acylglcycerols in the sample, providing value for one or more sample parameters.
EP1976611	WO2007US00623 20070110; US20060758080P 20060111; US20060449199 20060608	ARCHER DANIELS MIDLAND CO [US]	B01D15/08	Simultaneous synthesis and purification of a fatty acid monoester biodiesel fuel
EP1969090	WO2006US49680 20061229; US20050754979P 20051229; US20060831575P 20060717; US20060614618	ARCHER DANIELS MIDLAND CO [US]	C10G3/00; C07C67/03; C07C69/24; C07C69/52; C07J17/00; C10L1/02	Biodiesel production processes and biodiesel produced therefrom

Número de Publicação	Prioridade(s	Depositante	Classificação Internacional	Titulo ou Resumo
	20061221			
RO121991	RO20060000773 20061011	ARTEGO S A [RO]	C10L1/02; C07C69/003	The invention relates to a process and an installation for producing biodiesel fuel. According to the invention, the process consists in heating the raw oils up to the temperature of 38...42A C, admixing an alcoholic catalyst solution, in a ratio of 18...22% as compared with the oil, followed by the trans-esterification reaction at the temperature of 45...50A C, gravimetric separation of raw glycerol, correction of the excess alcohol and technical glycerol, purification of biodiesel fuel by serially treating the same with an aqueous solution of phosphoric acid, aqueous solution of ammonia and a final washing with twice demineralized water, admixture of N-isopropyl-N-phenyl-p-phenylene diamine oxidation preventive agent into the liquid mass and subjecting the final product obtained thereby to cold filtration, at temperatures below 20...25A C.
BRPI0517657	IT2004MI02163 20041111; WO2005EP11985 20051109	ASER S R L [IT]	C07C67/03; B01J21/10; C01F5/02; C01F7/00; C07C69/24; C07C69/52	Processo para a produção de ésteres de ácidos graxos e glicerina. Processo para a produção de ésteres de ácidos graxos e glicerina, utilizando catalisadores heterogêneos, especialmente para a produção de biodiesel, que é composto de dois estágios de reação de óleos vegetais ou gorduras animais com um mono-álcool alifático, em uma temperatura variando de 100 a 250 DEG C, na presença de um catalisador que é composto de óxido de magnésio ou óxidos misturados de magnésio e alumínio, obtido pela calcinação de compostos semelhantes à hidrotalcita que contêm Al e Mg com uma relação atômica de Mg/Al> 1, formando ésteres de ácidos graxos e glicerina; separação do mono-álcool não reagido; e separação dos ésteres de ácido graxo e da glicerina.
US2008214679	US20080040484 20080229; US20070904672P 20070302; US20070937128P 20070626; US20070937243P 20070626;	AUBURN UNIVERSITY [US]	A01N31/02; A01P5/00	Disclosed are compositions that include treated biodiesel glycerin. The disclosed compositions may be utilized as soil-amendments for controlling pests, weeds and for enhancing growth of plants. The biodiesel glycerin utilized in the disclosed compositions may be treated by one or more steps including neutralization, heating, refluxing, condensing, and distilling.

Número de Publicação	Prioridade(s	Depositante	Classificação Internacional	Titulo ou Resumo
	US20070964913P 20070815			
US2008282605	US20070749853 20070517	BAKER HUGHES INC [US]	C10L1/18	The addition of strong neutralizing amines to react with free fatty acid in biodiesel fuels that may be left from some synthesis routes can lower the total acid number (TAN) of the biodiesel fuel. Surprisingly, the strong neutralizing amines do not interfere with the biodiesel fuel itself which may be primarily fatty acid methyl esters. These strong neutralizing amines may also improve the oxidative stability of biodiesel fuels.
CN101213274	DE200510030282 20050629	BASF AG [DE]	C10L1/02; C10L1/14; C10L1/185; C10L1/198; C10L10/02; C10L10/12	Biodiesel fuel mixture containing polyoxymethylene dialkyl ether
WO2008104526	EP20070103323 20070301	BASF SE [DE]; SCHERZER DIETRICH [DE]; YAMAMOTO MOTONORI [DE]; SKUPIN GABRIEL [DE]	C08L67/04	The present invention relates to biodegradable polyester mixtures, comprising: i) 95 to 99.95% by weight, in relation to the total weight of the components (i to ii), of at least one biodegradable homopolyester or copolyester, selected from the group: polylactide, polycaprolactone, polyhydroxyalkanoate and polyester, made of aliphatic or aliphatic and aromatic dicarboxylic acids and aliphatic dihydroxy compounds, and ii) 0.05 to 5% by weight, in relation to the total weight of the components (i to ii), of biodiesel . The present invention further relates to a method for producing the polyester mixtures according to the invention, the use of the polyester mixtures according to the invention for producing molded parts, films or fibers, and molded parts, films or fibers comprising the polyester mixtures according to the inventions.
BRPI0702391	BR2007PI02391 20070212	BATISTA DA SILVA ALDO MARCOS [BR]	F26B3/02	Torre de secagem e controle de qualidade de biodiesel . O equipamento é constituído por um conjunto de elementos mecânico contendo cinco bandejas (1) aquecidas pela ação do STO (Thermal Synthetic Oil) que aquece tais bandejas provocando a evaporação da água e álcool contida no biodiesel , quando de sua lavagem. Com este processo elimina-se todo e qualquer vestígio de umidade contido no biodiesel .

Número de Publicação	Prioridade(s	Depositante	Classificação Internacional	Titulo ou Resumo
BRPI0702721	BR2007PI02721 20070212	BATISTA DA SILVA ALDO MARCOS [BR]; NILTON T OKU [BR]; REGINALDO O VICENTE [BR]	C02F1/04; B01D3/02; B01D17/02	Coluna de tratamento de efluentes com geração de energia e recuperação de álcool. O equipamento é constituído por um conjunto de elementos mecânicos capaz de efetuar o tratamento dos efluentes resultantes do processo de produção do biodiesel , com reaproveitamento da água e do álcool utilizados, associado à geração de energia elétrica.
US2008256845	US20070737809 20070420	BATTELLE ENERGY ALLIANCE, LLC [US]	C10L1/18	A method and a device for the production of biodiesel are disclosed. A suitable bio-feedstock may be exposed to microwave energy during a mixing process, a separation process, and a wash process. A synergistic effect of the microwave energy and centrifugal separation may be used in a continuous process for producing biodiesel . The biodiesel may be produced from the feedstock in a continuous flow path. The microwave energy may enhance the reaction of the feedstock and catalyst to provide a mixture of an ester and glycerin, and the microwave energy may enhance the separation of the ester and the glycerin in a centrifuge. Finally, the microwave energy may enhance the wash process of the ester in a centrifuge to purify the ester to produce a usable biodiesel .
CN101250443	DE20021052715 20021113	BAYER CHEMICALS AG [DE]	C10L1/02; C10L1/183	The present invention relates to a method for increasing the storage stability of bio -diesel by 2,6-di-tert.-butylhydroxytolu ene. According to said method, a liquid stock solution, which contains between 15 and 60 wt. % 2,6-di-tert.-butylhydroxytoluene diluted in bio -diesel is added to the bio -diesel to be stabilised, until a concentration of between 0.005 and 2 wt. % 2,6-di-tert.-butylhydroxytoluene, (in relation to the total solution of bio -diesel), is obtained. The invention also relates to the use of 2,6-di-tert.-butylhydroxytoluene for increasing the storage stability of bio -diesel , in addition to a bio -diesel with an increased storage stability.
CN101333451	CN20071042927 20070628; CN20081096812 20080502	BAYER TECHNOLOGY ENGINEERING S [CN]	C10G3/00	The invention provides a method for bio -diesel oil synthesis. The method comprises: firstly feeding oil and a low carbon alcoholic solution dissolved with alkaline catalyst into a heat exchanger respectively for heating in accordance with the given ratio, then filling the respectively heated oil and the low carbon alcoholic solution into a micro-mixer for continuous heat exchange for

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				mixing so as to form a reaction solution, then putting the reaction solution into a micro-reactor for reaction, finally separating and purifying reaction products to obtain the bio -diesel oil. The method has the advantages of shortening the reaction time, reducing the energy consumption, increasing the conversion and yield, and having no need of intermittent assisted time.
WO2008155436	ES20070001686 20070619; ES20070001687 20070619; ES20070001688 20070619	BEEB BIOENERGIAS S A [ES]; PEREZ CELADA GUILLERMO [ES]; MONTESINOS ALONSO VICENTE [ES]	C11C3/00; B01D3/00; B01D3/14; B01J3/00	Installation for the production of biodiesel comprising; optionally a support structure (5); - A filler or resistant body (6);. An assembly of vessels positioned or configured in the filler of said support structure (5) or resistant body (6); - A reactor circuit which includes the supply of the reactants from at least one pumping means through a first set of heat exchangers (2), a second set of heat exchangers (3) and/or a set of reaction units (4); and - A thermal insulating filler (7) placed between the elements (2, 3, 4) which form the reactor and vessels housed in the structural filler of the structure, - A pumping device with a piston arranged in the interior of the container from which the product to be pumped is taken, A distilling device.
CN101245251	CN20071004924 20070212	BEIJING BAOZHIJIE PETROLEUM CH [CN]	C10G3/00	At present, the preparation method of bio -diesel is mainly chemical method and biological enzyme, which leads the fat of animals and plants to be in ester-transferring reaction with short-chain alcohol (methyl alcohol, ethyl alcohol and so on) to produce bio -diesel with the effect of catalyst, the method has the same treatment to the fat in prophase, first, the fat in plants can be wrung and be done with the previous treatment like degumming and decolorizing, etc., the process does not only increase the cost but also cause environmental pollution, and the invention provides a method without any previous treatment, directly uses plants to product bio -diesel . The technical proposal of the invention is that after the plants containing fat are done with common oil processing rolling tablets, tetrahydrofuran and methyl alcohol are directly used for leaching the oil for ester-transferring reaction, after distillation, tetrahydrofuran and methyl are steamed out for repeated use, while after separation, bio -diesel and crude glycerin can be got from the material after distillation.
CN101220289	CN20071000084	BEIJING HUAYANG	C10G3/00	The invention discloses a method for producing biodiesel via

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	20070110	HESHENG ENERGY [CN]		single-phase catalysis, which mixes the triglyceride, low carbon alcohols and cosolvent with the proportion range from 10: 1: 1 to 15: 1: 1, and then adds complex formulation alkaline solid catalyst to make chemical reaction, thus obtaining the biodiesel . The method adopts special latent solvent and the reaction of the triglyceride and the low carbon alcohols to form fatty acid methyl ester is a single-phase reaction, so the reaction speed is very fast and the transforming ratio is very high; no water is produced in the process of reaction, which leads the reaction time to be much shorter and the reaction to be much fuller. All the whole reaction is conducted in one phase and as the latent solvent participates in the reaction, glycerol acetate is successively produced in the reaction and no separation steps are needed, thus improving the ration of biodiesel reaction and the comprehensive performance of the product. .
BRPI0605024	BR2006PI05024 20061106	BELITARDO ISAIAS RODRIGUES [BR]; BENTO FLAVIA REGINA [BR]	C10L1/02	Processo de produção e equipamento para obtenção de biodiesel por reação rápida de transesterificação realizada com os álcoois etanol e metanol, para que se pudesse verificar as diferenças entre os dois processos. Também foram realizados alguns testes com dois catalisadores diferentes, buscando a redução do tempo de reação. A redução do tempo de reação frente aos processos convencionais representa a contribuição em inovação trazida por este trabalho. As melhorias introduzidas no processo de produção de biodiesel foram demonstradas em uma planta piloto de produção de biodiesel , para fins de demonstrações didáticas do processo.
US2008271364	US20060915479 20060525; US20050684516P 20050526; WO2006IL00622 20060525	BEN GURION UNIVERSITY OF THE NEGEV RESEARCH AND DEVELOPMENT AUTHORITY [IL]	C10L1/18	The invention provides methods for production of biodiesel from Balanites aegyptiaca oil or crushed nuts, and further relates to the biodiesel obtained. The Balanites aegyptiaca biodiesel obtained has a composition of triglycerides of mainly C16:0 and C18:0 saturated and unsaturated fatty acids, with a very high content of linoleic acid and of oleic acid, and it further contains Balanites saponins, acting as surfactants, which reduce the rate of corrosion and improve the performance of the engyne.
WO2008115806	US20070918514P 20070316	BEST EN INC [US]; KAPICAK LOUIS A	C10L1/18	Basic metal salt of glycerin is used as transesterification catalyst or an intermediate to an anhydrous transesterification catalyst for

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		[US]; SCHRECK DAVID JAMES [US]		the base catalyzed process for making biodiesel from fats and oils.
WO2008091944	US20070897128P 20070124	BEST EN INC [US]; MALISZEWSKI THOMAS ARTHUR [US]; BUNNING DONALD LEROY [US]; SCHRECK DAVID JAMES [US]; KAPICAK LOUIS A [US]; BALMER NORMAN LOUIS [US]	C10L1/08	Waste water emissions from a biodiesel production facility are substantially reduced by recovering water from a spent water stream used in a water washing step in the refining of crude biodiesel which has a concentration of lower alkanol below about 5000 parts per million by mass. The water washing removes glycerin from the crude biodiesel . The water is recovered from the spent water stream and is concentrated to provide an aqueous fraction which can be recycled for the water washing and an aqueous, glycerin- containing fraction that preferably contains at least about 10 mass percent glycerin.
CN101328418	CN20071123331 20070622	BINGYU YU [CN]	C10G3/00	The invention relates to a method for manufacturing biodiesel from vegetable oil. The method particularly comprises the following steps that: the vegetable oil is used to form fatty acid ester under the action of an acid catalyst or a basic catalyst through reacting with low molecular alcohol; and the biodiesel is obtained by using a glycollic acid substance through centrifugal separation. The method can reduce the discharge degree of atmospheric environmental pollutants, and the biodiesel belongs to a renewable and available resource.
JP2008231345	JP20070076206 20070323	BIO EN JAPAN CORP [JP]	C10L1/02; B01J20/08; B01J20/10; B01J20/20; C07C67/03; C07C67/54; C07C67/56; C07C69/02; C07C69/52; C10L1/08; C11C3/10	PROBLEM TO BE SOLVED: To provide a method for producing a biodiesel fuel which enables the use of, as a raw material, the whole oils and fats with an acid value of 20 or less, is friendly to the environmental, does not need waste water treatment, and also is adapted to the quality specification. - SOLUTION: The method for manufacturing a biodesel fuel uses, as a raw material, oils and fats having an acid value of 20 or less, and comprises a step of heating the raw material oils under reduced pressure to thereby distill off water, odor substances and free fatty acids, a step of bringing the raw material oils into contact with a hydrophilic adsorbent, to thereby adsorb and then remove the remaining free fatty acids and acidic substances, a step of transesterifying it in the presence of a potassium-based alkali catalyst and a step of purifying by a nonaqueous method a light liquid component in the reaction product by the

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				transesterification. - COPYRIGHT: (C)2009,JPO&INPIT
ITMI20080894	IT2008MI00894 20080516	BIOCOMPANY SRL		Processo per la preparazione di biodiesel
EP1983039	WO2007ES00019 20070118; ES20060000135 20060120	BIODIESEL DE ANDALUCIA 2004 S [ES]; LEBRON PAREJO JOSE DAVID [ES]; GARCIA RUZ CRISTOBAL [ES]	C10L1/02; C11C3/10	Method for obtaining a biodiesel in a continuous system from vegetable oils of variable degree of acidity, whereby, in a first step, a specific blend of vegetable oils of variable degree of acidity and methanol or ethanol are subjected to pressure and to heat in a multiple and continuous horizontal modular tube reactor, in the presence of a strong acid as catalyst, until a vegetable oil with an acidity of less than 1% is obtained. In a second step, this oil is transesterified by being blended with sodium or potassium methoxide, the glycerol being separated out, leaving glycerol on the one hand and, on the other, biodiesel , which, once purified and scrubbed, will be suitable for use in engines. The number of modules, both in the first and in the second step, is a function of the system's capacity.
WO2008081202	GB20070000188 20070105	BIOFUEL SYSTEMS GROUP LTD [GB]; O'BRIEN PAUL [GB]	C10L1/02; C10L1/18	The present invention relates to a method of producing a jet engine fuel comprising, mixing a first bio-fuel (for example bio - diesel) with a different second fuel in the presence of a co-solvent capable of effecting a substantially single phase solution of the bio-fuel and two or more different fuels.
WO2009002880	US20070945890P 20070622	BIOFUELBOX CORP [US]; ANDERSON GREG [NZ]	C10L1/32	Vessels and methods for esterification and transesterification of fatty acids under near critical or supercritical reaction conditions are disclosed herein. Alkyl esters produced in the vessel with the disclosed methods are used to create biofuel, such as biodiesel .
US7452515	US20070935514 20071106	BIOFUELS ALLIED INC [US]; POWERTECH INTERNAT HOLDING AG [CH]	B01J19/00; B01J19/26	A system for making a biodiesel fuel using a biofuel reactor with at least one chamber and at least a two atomizers in each chamber, at least one atomizer with biofuel feedstock nozzles, and a second atomizer with alcohol with catalyst nozzles to simultaneously atomize and quickly react the biofuel feedstock with the alcohol with catalyst. A polyol separator separates the microparticles into a crude polyol stream and a crude biodiesel stream, and a conduit with an inlet introduces water to the crude biodiesel stream. A separator is used to separate a first portion of water from the crude biodiesel stream forming a washed crude biodiesel with a second portion of washing water, and a heat

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				exchanger is used to form dried biodiesel and wash water vapor. A cooler cools the dried biodiesel , and a filter is used to remove particles from the cooled biodiesel forming the biodiesel .
CN101280228	CN20071014150 20070405	BO YU [CN]	C10L1/00	The invention discloses a bio -diesel which comprises the raw materials 30-70% of diesel, 10-50% of rap oil and 10-50% of cotton oil in volume ratio. The bio -diesel has the advantages of simple formula, simple production and good application effect.
CN101294096	CN20081011574 20080522	BOHAI UNIVERSITY [CN]	C10G3/00	A preparation method of bio -diesel for solving the problems such as complex post-treatment and environmental pollution existing in the conventional method comprises the following steps: mixing animal and plant oil or waste grease with methanol or ethanol in the presence of nanometer crystal whisker catalyst with an amount of 0.1 to 5% the weight of the raw material oil and an alcohol/oil molar ratio of 4:1 to 10:1, carrying out ultrasonic transesterification reaction, standing the reactive mixture to obtain an upper layer containing the mixture liquid of glycerol and residual methanol or ethanol and a lower layer containing crude product, and pump-filtering the lower crude product layer to obtain the bio -diesel . The preparation method of the invention is efficient, safe and pollution-free and is conducive to industrial production, and meets the requirement of people for the environment. The yield of the bio -diesel prepared by the method is above 97%. The method has the advantages of simple operation, less consumption of catalyst, short time, greatly simplified post-treatment process, no environmental pollution, safe and reliable operation, and low production cost, and is suitable for industrial production.
CN101294095	CN20081011573 20080522	BOHAI UNIVERSITY [CN]	C10G3/00; B01J23/06; B01J27/055; B01J27/232; B01J35/00; C11C3/10	A method for preparing bio -diesel by using nanometer crystal whisker comprises the following steps: selecting animal and plant oils or waste grease as the raw material, adding methanol or ethanol at a alcohol/oil molar ratio of 3:1 to 10:1, stirring, adding nanometer crystal whisker catalyst at an amount of 0.1 to 5% the weight of the raw material oil, carrying out transesterification reaction at 50 to 120 DEG C for 1 to 6 h, filtering immediately after the reaction to separate the nanometer crystal whisker catalyst, and standing the filtrate to separate an upper layer and a

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				lower layer, wherein the upper layer is the mixture solution of methanol or ethanol and glycerol, and the lower layer is the bio -diesel . The method has the advantages of mild reaction condition, environment friendliness, easy separation of the product, high yield of the prepared bio -diesel (above 90%), no generation of industrial waste water, simple process, low production cost and less consumption of catalyst, and the recovered catalyst and the methanol or the ethanol can be reused in the reaction. The method is suitable for industrial production.
ES2306612	ES20070001135 20070426	C & C UNION AUSTRAL IBERICA S [ES]	C11B15/00; C07C53/126	Composición a base de ácido esteárico para la solidificación de aceites o grasas usados. La invención se adscribe al sector técnico del tratamiento de residuos, en concreto al tratamiento de aceites vegetales o grasas, de freír en el ámbito doméstico y en el sector servicios (hostelería), así como al tratamiento de residuos industriales a base de aceites de origen mineral y derivados del petróleo en diferentes industrias que los generen, así como en talleres mecánicos del sector automoción. Consiste en la adición en caliente al aceite o grasa usados de una composición a base de ácido esteárico. Una vez enfriada la mezcla y solidificado el aceite o grasa usado, éstos pueden ser más fácilmente desechados como RSU, bien reciclados en plantas de tratamiento de desechos específicas, bien utilizados como biodiesel o en la fabricación de velas y jabones.
EP1976959	WO2006CA02015 20061212; US20050304658 20051216	CANADA NATURAL RESOURCES [CA]	C10G3/00; C11C3/10	Production of biodiesel from triglycerides by using thermal cracking
US2008260902	US20080587258 20080422; US20040564202P 20040421; US20040628069P 20041115; WO2005US12545 20050414	CARGILL, INCORPORATED [US];RENESSEN, LLC [US]	A23L1/105; A23D9/00; A23K1/00; A23K1/14; A23K1/16; A23K1/18; A23L1/10; A23L1/30;	Corn oil is extracted from corn to form a corn meal. Processing the corn grain to obtain the oil, meal, and other product streams generally includes dividing the corn kernel by fractionating to create a higher oil fraction and a lower oil fraction, forming a solvent extractable structure from the higher oil fraction, and extracting the oil from the higher oil fraction. The extracted corn oil is useful for making nutritionally enhanced edible oil or cooking oil, lubricants, biodiesel , fuel, cosmetics and oil-based or oil-

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			A61K8/92; A61K8/97; A61Q1/06; A61Q1/10; B02B1/00; B02B5/02; C08B30/02; C08H5/00; C08L99/00; C10L1/02; C10L5/44; C11B1/00; C11B1/04; C11B1/06; C11B1/10	containing chemical products. The extracted corn meal is useful for making enhanced animal feed rations, snack food, blended food products, cosmetics, and fermentation broth additive. The lower oil fraction is useful for one or more processes such as fermentation, wet-milling, animal feed production, sweetener production, and starch production, making enhanced animal feed rations, snack food, blended food products, and cosmetics.
CN101273230	EP20050255487 20050906	CASTROL LTD [GB]	F16N29/00; C10L1/08; C10L1/18; F01M1/18; F01M11/10; G01N21/35	A method for monitoring the performance of a compression-ignition, internal combustion engine which method comprises lubricating the engine with a crankcase lubricant, and introducing a fuel to the engine to operate the engine characterised in that the fuel comprises greater than 50 % by weight of petroleum-based, middle distillate fuel oil and/or a Fischer Tropsch derived middle distillate fuel oil and 2.5 % to 25 % by weight of at least one lower alkyl ester of a fatty acid , and the performance of the engine is monitored by measuring the rate of ingress of lower alkyl ester of a fatty acid from the fuel into the crankcase lubricant by infra red spectroscopic analysis of the crankcase lubricant.
EP1976815	WO2007US00968 20070111; US20060758246P 20060111	CERAMATEC INC [US]	C07C27/10	Synthesis of biodiesel using alkali ion conductive ceramic membranes
CN101225321	CN20071192292 20071224	CHANGZHOU LUKONG ENERGY EQUIPM [CN]	C10G3/00	The invention provides a preparation method of biodiesel , comprising materials and a reactor, which comprises the following steps: taking the vegetable fat, the animal fat and the waste fat as the materials and the putting 1000 shares fat, 150 to 200 shares methanol and 5 to 30 shares catalyst into the reactor to blend evenly, heating and pressing and then reacting for 4 to 6

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				hours at constant temperature 150 to 300 degrees C and constant pressure 0.15 to 1.57 MPa, and then distilling, separating after reducing the pressure to atmospheric pressure and at last obtaining the biodiesel with small molecular weight after distilling in vacuum continuously. The biodiesel made in moderate temperature and low pressure has the advantages of good combustion performance and good reproducing property. The main materials come from vegetable fat, the animal fat and the waste fat, which are not exhausted. The energy consumption rate is only 0.311 MJ, which is much lower than the petrochemical diesel fuel, so the biodiesel can be used solely and also be mixed with the petrochemical diesel fuel in any proportion. The biodiesel is taken as the new energy, can be used in diesel fuel and has an advantage of good environment-friendly performance. The sulfur content is low, so the emission of the sulfur dioxide and the sulphide is low, reducing by about 30 percent while the emission of the sulphide, the lead and the toxicant is zero.
CN101209452	CN20061170669 20061227	CHAOWANG LI [CN]	B09B3/00; A23L1/00; A23L1/10; B04C9/00; C10L1/00; F23G7/00	The invention relates to a multi-functional garbage processing method, which is a pioneering invention in the city environmental protection field. The technique is characterized in that domestic garbage and industrial garbage in large and medium-sized cities are gathered and a garbage fluffer is used for discongesting bale garbage; a magnet separator and a cyclopneumatic separator are used for separating hard sundries of heavy metal, stones and glass, etc. from soft sundries of grain, vegetables, paper, plastic and cloth, etc.; the sundries of stones, glass, heavy metal, etc. are sent into a high temperature differentiation furnace for melting into various industrial raw materials; substances of grain, vegetables, paper, plastic and cloth, etc. that contain mycomycin and odor are rolled by a pedrail conveyor and then sent into a highly efficient aging storehouse after slag and ash are screened; a juicing and thread rolling machine is used for extracting water that contains resin and grease so as to manufacture ethanol or biodiesel ; residual sizing agent is sent to an electricity and oxygen mixed reactor and added with hydroxyl free radical for prilling and drying so as to obtain compound fine fodder for

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				various animals after antisepsis, deodorization and kibbling.
CN101333465	CN20081064245 20080407	CHENGXUAN HUANG [CN]	C10L1/00	The invention provides a novel method for regenerating diesel oil in the production of renewable energy resources. The method is characterized in that: organisms and old objects are mixed for preparing the diesel oil, and the product reproduced by mixing organisms and old objects is the diesel oil under the function of new formula. The successful mixing at one go can be achieved through improving the technique under the condition of not adding any apparatus. The method breaks the proportion of 2:8 between bio -diesel oil and national standard oil when in matched use, and reaches the mixing rate of 33 percent. All indexes of the regenerated diesel oil meet the standards of mineral diesel oil, and the price excels that of the mineral oil.
CN101250425	CN20081103693 20080410	CHINA HUANQIU CHEMICAL ENGINEE [CN]	C10G3/00; C11B3/10	The invention relates to a method preparing biological diesel oil through adopting a loop reactor, which comprises the following steps: adopting a loop reactor, mixing raw material oil and lower alcohol according to molar ratio of methanol to oil which is 4-16, catalyst which is NaOH or KOH, and concentration which is 200-50000ppm of the weight of vegetable oil, pumping into a loop reactor through a measuring pump, adjusting reaction pressure to be 0.2-10.0MPaG, pumping in heat conducting oil in the jacket of the reactor, adjusting flow quantity of the heat conducting oil, leading material to control reaction temperature between 60 and 300 DEG C in circulatory flow, wherein the retention time of reaction material in the reactor is 10-120 minutes, adjusting recycle ratio of medium in a pipe to be 25-250 through adjusting the flow quality of the circulating pump, wherein the vegetable oil and lower alcohol do an ester exchange reaction to generate biological diesel oil in fully mixed reaction status and under the function of catalyst, wherein the conversion rate of oil is 99%, and the selectivity of fatty acid methyl ester is 97%.
CN101275089	CN20071064983 20070330	CHINA PETROCHEMICAL CORP [CN]	C10L1/24	The present invention provides a method of improving biodiesel oxidation stability, including: adding at least one sulfides compound containing phenols with following structure in biodiesel or blending fuel containing biodiesel , based on the weight of biodiesel , the adding quantity is 10-20000mg/kg.

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CN101280209	CN20071010895 20070404	CHINA PETROCHEMICAL CORP [CN]	C10G3/00	The invention relates to a method of producing bio -diesel continuously; animal, vegetable oil and low alcohol raw materials are reacted in a reactor composed of two parts and transformed into fatty acids short chain ester; namely, the bio -diesel ; the first part of the reactor is a full-backmixing reactor used for providing high-efficiency mass transfer space for the raw materials so that the oils and the alcohols are enabled to be contacted sufficiently for reaction; the phase separation tendency of the mixture after reaction is reduced obviously; the second part of the reactor is a tubular reactor used for providing sufficient reaction time and space so that the raw materials are enabled to be transformed sufficiently for the generation of target product. Because reaction product from the reactor only contains very small quantity of residual glyceride, the product can fulfill the content requirement of the low carbon ester (such as methyl ester) in the product standards after the excessive lower alcohol and glycerol are separated from the product; thereby, the process of methyl ester distillation can be avoided.
CN101294098	CN20081048076 20080616	CHINA THREE GORGES UNIVERSITY [CN]	C10G3/00; B01J35/00; C10G7/06; C11B13/00	A method for preparing bio -diesel by using reverse micelle catalyst is specifically suitable for the resource utilization of various waste oil such as tailings of oil plants, cooking oil, waste oil, soapstock, swill oil and so on to directly transform waste oil into the increasingly demanded diesel substitute, i.e. bio -diesel , in a reverse micelle catalysis system. The reverse micelle catalyst is composed of surfactant, water and alcohol at a proper ratio. The method comprises the following steps: adding sulfuric acid in the waste oil, introducing steam, boiling, washing with water, and separating to obtain an acidified oil layer; and adding a reverse micelle catalyst at an amount of 0.5 to 10% that of the oil and alcohol at an amount of 10 to 50% that of the acidified oil slowly, stirring at a speed of 1,500 to 3,000 rpm to form a reverse micelle catalysis reaction system, heating and reflowing for 3 to 10 h, washing with water, standing to obtain crude bio -diesel , and distilling at 200 to 250 DEG C and under 0.001 to 0.0001MPa to obtain the pure bio -diesel with a total yield above 75%. The method has the advantages of simple and reliable process flow, high production efficiency, low energy consumption

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				and less waste water discharge.
CN101328420	CN20081070006 20080722	CHONGQING HUAZHENG ENERGY SOUR [CN]	C10G3/00	The invention discloses a method for producing biomass fuel by catalytic cracking from scraps of animal and vegetable oil. The method comprises the following steps that: the animal and vegetable oil or the scraps thereof are subjected to decontamination and dehydration to make an impurity content less than 3 percent and a moisture content less than 3 percent; 2. under the condition of normal temperature, a mass ratio between a raw material and a catalyst in a reaction kettle is between 100 to 2 and 10, the reaction kettle is slowly heated to a temperature of between 300 and 500 DEG C to carry out a catalytic cracking reaction; and a product obtained after the reaction is distilled under normal pressure, a biological gasoline fraction is distilled at a temperature of between 40 and 190 DEG C, and a biological diesel fraction is distilled at a temperature of between 190 and 290 DEG C; and 4. the catalyst is amorphous aluminum silicate, gamma-Al2O3 or a molecular sieve. Compared with the prior method for producing biodiesel by an esterification method or an interchange esterification method, the method for producing the biomass fuel of the invention does not use concentrated sulfuric acid or inorganic base which have strong corrosiveness, has small pollution to the environment and small corrosion to equipment, and reduces cost in sewage treatment; and the raw material has wide application range, comprising animal and vegetable fat, hogwash oil, waste oil, chafing dish oil, bottom oil of plant oil, soapstock, acidified oil and so on, has no restriction on the acid value of the raw material.
CN101260312	CN20081031191 20080429	CHUBAI DENG [CN]	C10G3/00; C12S3/18	The invention relates to a method to produce bio -diesel . The invention includes the steps as follows: firstly materials with parts by weight are weighed, including cottonseed extract (10), rapeseeds extract (10), rapeseeds shell (3), olive tree (2), palm (2), rapeseeds stem (10), biogas liquid (2), waste animal lipid (3), rapeseeds extract (5), and slop oil (43); secondly the materials are mixed and stored in a recycling pool, thirdly caustic soda as the additive is added to the recycling pool, the smashed camphortree as the non-synthesized additive is added with a

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				ratio; fourthly all materials are mixed for derivation and fermentation for three weeks, fifthly the fermented mixture is sent to a smashing workshop to be smashed, sixthly the smashed mixture is sent to a filtering workshop to be filtered, with the filtered liquid of every filtering stage sent to a high-pressure workshop to be refined and, seventhly the mixture is evaporated by boilers in the high-pressure workshop to obtain a liquid, then the evaporated liquid is cooled down and conveyed to the storage can, and then the liquid is conveyed to a three-phase separator to be refined to obtain glycerin and rough methyl acrylate and; eightly the rough methyl acrylate is fed into a refining procedure to be refined into methyl acrylate, i.e. the bio -diesel .
EP1969097	WO2006EP70139 20061222; US20060756090P 20060104	CIBA SC HOLDING AG [CH]	C10L1/02; C10L1/14; C10L1/185; C10L1/232	Stabilized biodiesel fuel compositions
EP1996680	WO2004IN00329 20041020	COUNCIL SCIENT IND RES [IN]	C10L1/02; C07C67/03	Improved process for the preparation of fatty acid methyl ester (biodiesel) from triglyceride oil through transesterification
WO2008123925	US20070919383P 20070322	CPS BIOFUELS INC [US]; BRADIN DAVID [US]; GRUNE GUERRY L [US]	C10L1/18; C07C51/43; C11B13/00	Processes for producing biodiesel compositions are disclosed. FFAs present in the triglycerides can be removed by reaction with isobutylene, or by Kolbe electrolysis. The Kolbe electrolysis can be performed on the starting material, or on the crude glycerol. The triglycerides are transesterified to form alkyl esters of the fatty acids and glycerol. The transesterification reaction can be catalyzed by an alkoxide, rather than a hydroxide, to help keep the glycerol by-product dry. The alkoxide salt can be neutralized by reaction with a dry acid, such as gaseous hydrogen chloride or sulfuric acid, and the resulting alcohol removed by distillation, and at least a portion of the neutralized salt can be removed by filtration or decantation. The process can provide improved biodiesel yields, and glycerol pure enough for use directly in glycerol ether manufacture.
CL7092008	CL20080070920 20080310	CRISTIAN AUGUSTO ROMERO SALAZA [CL]	C05F5/00; C07C27/00; C12P5/00	Sistema energetico integrado y biorefineria que comprende una planta de etanol, planta de biodiesel y planta de biogas con la generacion de oxydiesel, pudiendo funcionar ademas dicho sistema con solo la combinacion de dos plantas; y procedimiento

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WO2008092207	AU20070900488 20070202	DALRIADA MEAT PTY LTD [AU]; OSCHMANNS WALTER [AU]	C11C3/00; C10L1/02; C10M101/04; C10M107/26; C10M107/32; C10M129/95; C11C3/04; C11C3/08; C11C3/10	A process for producing alkyl fatty acid esters suitable for use as a fuel and/or lubricant. The process includes treating a feedstock containing glycerides and/or free fatty acids with a lipase, a lower alkyl alcohol and an acid catalyst under conditions to produce said alkyl fatty acid esters.
BRPI0704587	BR2007PI04587 20070307	DE SANTIS ESCUDERO JOSE [BR]	C10L1/02	Formulação e processo de produção de biodiesel . Patente de modelo de invenção para produção de um novo biodiesel , com nova formulação e novo processo de fabricação. Esta invenção proporcionara a obtenção de um biodiesel com excelentes características de combustão, viscosidade e detergência ,para motores ciclo diesel equipados ou não com sistemas de injeção eletrônica. O processo de fabricação proporciona redução de custo e principalmente a não geração de resíduos como no sistema tradicional. A invenção é caracterizada pela adição de acetato de etila, ou algum outro solvente ao óleo vegetal ou gordura animal até atingirmos a viscosidade normatizada pela ANP-Agencia Nacional do Petróleo ou outro órgão oficial,e podendo ou não ser adicionado álcool etílico para redução de custo ou melhoria da octanagem do combustível.
EP1963410	WO2006EP12055 20061214; EP20050077859 20051214; EP20060829608 20061214	DE SCHRIJVER ASTER [BE]; MOURA BORDADO JOAO CARLOS [PT]	C08J9/00; C08G18/36	Polymer foam composition containing a biodiesel
EP2009434	US20070771516 20070629	DELPHI TECH INC [US]	G01N27/22; G01N33/28	Systems and methods for determining a concentration of biodiesel in a mixture of biodiesel and petrodiesel are provided. In one exemplary embodiment, a method includes receiving an oscillatory signal at an inductance-capacitance-resistance circuit (20). The circuit (20) has a sensing element (42) fluidly communicating with the mixture of biodiesel and petrodiesel. The

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				method further includes generating a resonant current at a resonant frequency utilizing the circuit (20) in response to the oscillatory signal. The method further includes determining a concentration value indicating the concentration of the biodiesel in the mixture based on an amplitude of the resonant current and/or the resonant frequency, utilizing a microprocessor (30). The method further includes storing the concentration value in a memory device (32), utilizing the microprocessor (30).
EP2009439	US20070771543 20070629	DELPHI TECH INC [US]	G01N33/28; G01N27/22	Systems and methods for determining a total acid number associated with biodiesel in a mixture of biodiesel and petrodiesel are provided. The method includes receiving an oscillatory signal at an inductance-capacitance-resistance circuit (20). The circuit (20) has a sensing element (42) fluidly communicating with the mixture of biodiesel and petrodiesel. The method further includes generating a resonant current at a resonant frequency utilizing the circuit (20) in response to the oscillatory signal. The method further includes determining a dielectric constant value indicating a dielectric constant associated with the biodiesel in the mixture based on the resonant frequency of the resonant current, utilizing a microprocessor (30). The method further includes determining a concentration value indicating a concentration of the biodiesel in the mixture based on an amplitude of the resonant current and the dielectric constant value, utilizing the microprocessor (30). The method further includes determining the total acid number associated with the biodiesel in the mixture based on the amplitude of the resonant current or the resonant frequency, and the concentration value, utilizing the microprocessor (30).
CN101307247	CN20081071381 20080714	DENGLONG CHEN [CN]	C10G3/00; C11C3/00	The invention relates to a method for making biological diesel oil, in particular to a method for making biological diesel oil by grease with high acid value, belonging to the renewable energy resource technical field. The production formula of the method in weight portion is as follows: 100 portions of grease, 20 portions of bridle chain alcohol, 1 to 10 portions of fatty acid methyl ester , 0.5 to 4 portions of catalyst and 0.1 to 5 portions of alkalescent buffer substances. The concrete steps are as follows: the grease is put in a reaction kettle provided with a high speed blending device,

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				added with the bridle chain alcohol and the fatty acid methyl ester , and undergoes high speed stirring at the room temperature for 1 to 4 hours so as to form emulsion, and the emulsion is added with the alkalescent substances and undergoes high speed stirring for 1 t0 4 hours; KOH or NaOH is dissolved in methyl alcohols to prepare the KOH or NaOH methanol solution with mass percentage concentration between 8 and 10 percent, which is used as catalyst; the emulsion is added with the catalyst and undergoes back flow reaction for 0.5 to 4 hours; after the reaction, reactants are cooled down to the temperature of 40 DEG C and then undergo standing separation to remove side products such as glycerin, etc. on the lower layer, and coarse products of the biological diesel oil are obtained; the coarse products of the biological diesel oil undergo normal pressure distillation to recover excessive bridle chain alcohols and undergo molecular distillation to obtain the qualified biological diesel oil. The method of the invention has the advantages of simple production process, mild condition, easy post treatment, low manufacturing cost, good economical efficiency of process and easy realization of industrialization, and has a good prospect for large-scale popularization and application.
CN101307242	CN20081071387 20080714	DENGLONG CHEN [CN]	C10G1/00; C10G3/00	The invention relates to a method for making biological diesel oil, in particular to a method for making biological diesel oil by seeds and fruit of plants. The making steps of the invention are as follows: the seeds and fruit of the plants are separated, dried and crushed and put in a reaction kettle provided with a cutting and blending device (the rotary speed is more than 300rev/m) and added with bridle chain alcohols and fatty acid methyl esters, and the mixture undergoes high speed cutting and stirring at the room temperature for 1 to 4 hours to form uniform suspension liquid, and the suspension liquid is added with alkalescent materials and undergoes high speed stirring for 1 to 4 hours; KOH or NaOH is dissolved in methyl alcohols to prepare the KOH or NaOH methanol solution with mass percentage concentration between 8 and 10 percent, which is used as catalyst; the suspension liquid is added with the catalyst and undergoes the back flow reaction for 0.5 to 4 hours; after the reaction, reactants are cooled down to

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				the temperature of 40 DEG C and then undergo pressure filtration to obtain separated filtrate, and filter cakes are used for other purposes; the separated filtrate undergoes the standing separation to remove side products such as glycerin, etc. on the lower layer, and coarse products of biological diesel oil are obtained; the coarse products of biological diesel oil undergo normal pressure distillation to recover excessive bridle chain alcohols and undergo molecular distillation to obtain the qualified biological diesel oil. The method of the invention has the advantages of simple production process, high utilization rate of vegetable fat, low manufacturing cost and good economical efficiency of process, and has a good prospect for large-scale popularization and application.
CN101307243	CN20081071388 20080714	DENGLONG CHEN [CN]	C10G1/00; C10G3/00; C11B1/10	The invention belongs to the burning fuel technical field, particularly relating to a method for making biological diesel oil by seeds of Chinese soapberry. The making steps of the invention are as follows: the seeds of Chinese soapberry are separated, dried and crushed and put in a reaction kettle provided with a cutting and blending device and added with bridle chain alcohols and fatty acid methyl esters, and the mixture undergoes high speed cutting and stirring at the room temperature for 1 to 4 hours to form uniform suspension liquid, and the suspension liquid is added with alkalescent materials and undergoes the high speed stirring for 1 t0 4 hours; KOH or NaOH is dissolved in methyl alcohols to prepare the KOH or NaOH methanol solution with mass percentage concentration between 8 and 10 percent, which is used as catalyst; the suspension liquid is added with the catalyst and undergoes back flow reaction for 0.5 to 4 hours; after the reaction, reactants are cooled down to the temperature of 40 DEG C and then undergo pressure filtration to obtain separated filtrate, and filter cakes are used for other purposes; the separated filtrate undergoes standing separation to remove side products such as glycerin, etc. on the lower layer, and coarse products of the biological diesel oil are obtained; the coarse products of biological diesel oil undergo normal pressure distillation to recover excessive bridle chain alcohols and undergo molecular distillation to obtain the qualified biological diesel oil.

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				The biological diesel oil made by the method has the advantages of high cetane number and low solidifying point, and is suitably used in the low temperature condition. The method of the invention has the advantages of simple production process, low cost and good economical efficiency of process, and has a good prospect for large-scale popularization and application.
SG148049	SG20070003436 20070518	DENNIS POTTER		"SUPER-LUBE" BIODIESEL & POLYOLS A method of making super-lube biodiesel and polyurethane polyols from vegetable oils using the same plant and equipment.
JP2008212772	JP20070049729 20070228	DOSHISHA [JP]; KEIHANNA KK [JP]	B01J31/12; B01J35/10; B01J37/02; B01J37/03; B01J37/08	PROBLEM TO BE SOLVED: To provide a solid catalyst suitable for manufacturing of bio -diesel oil from raw fat and oil, and a manufacturing method of the catalyst. - SOLUTION: The solid catalyst is calcium diglyceroxide obtained by reacting a raw material of calcium oxide with a specific basic strength and an amount of base, or calcium hydroxide obtained by hydrating the calcium oxide, with a methanol solution of glycerol in a heated circulating flow, or calcium methoxide obtained by reacting the raw material with methanol in a heated circulating flow, the calcium methoxide having a surface area of 40m<SP>2</SP>/g or more. The surface of a carrier of the catalyst is coated with calcium diglyceroxide or calcium methoxide. The carried type catalysts are obtained by fixation of calcium carbonate by a carbon dioxide combining method or impregnating and fixation of calcium acetate followed by firing. - COPYRIGHT: (C)2008,JPO&INPIT
US2008276524	US20070801174 20070508	DUPONT PERFORMANCE ELASTOMERS LLC [US]	C10L1/20; C10L1/19	Disclosed herein is a fuel management system having at least one fluororubber component in contact with biodiesel fuel wherein said 5 fluororubber component comprises i) a peroxide cured fluoroelastomer comprising copolymerized units of vinylidene fluoride and at least one other fluoromonomer, said fluoroelastomer having cure sites selected from the group consisting of iodine and bromine atoms, and ii) 0 to 5000 parts by weight of an inorganic acid acceptor per million parts fluoroelastomer.
EP1989275	WO2007US01863 20070125;	EASTMAN CHEM CO [US]	C09K15/32; B01F1/00;	Antioxidant compositions useful in biodiesel and other fatty acid and acid ester compostions

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	US20060764997P 20060203; US20060857272P 20061107		C08K5/00; C08K5/04; C09K15/08; C09K15/24; C10L1/02; C10L1/14; C10L1/18; C11B5/00	
CN101225963	CN20071007638 20070119	EASTRIVER ENERGY RESOURCE & SC [CN]	F23G7/06; C02F1/66	The invention provides a multifunctional waste gas and wastewater recovery and recycling method, in particular to a multifunctional waste gas and wastewater recovery and recycling method in the biodiesel production craft which takes waste oil and grease as material. The recovery and recycling method is characterized in that: the method not only can recycle and process the cacodorous pyrolysis gas such as low boiling point and short chain ester and alkane that is discharged to the environment in the traditional manufacturing technique, and then which is delivered to a boiler for being burnt fully, and the emission gas is in line with the state environmental protection standards; simultaneously, the cacodorous operating water in the traditional manufacturing technique can be processed and arranged into a pump chamber again for recycling, rather than discharged into the environment, thereby the multifunctional waste gas and wastewater recovery and recycling method has the advantages that: nearly 100-ton water can be saved everyday and the environmental pollution can be prevented.
US2008223752	US20080047585 20080313; US20070894724P 20070314; US20070894726P 20070314; US20070894730P 20070314	ENDICOTT BIOFUELS II LLC [US]	C10L1/04; C07C69/00	The present invention relates to a process and apparatus for the production of carboxylic acid esters and/or biodiesel fuel from feedstocks containing fatty acids, glycerated fatty acids, and glycerin by reactive distillation. Specifically, in one embodiment, the present invention relates to the production of biodiesel fuels having low glycerin, water, and sulfur content on an industrial scale.
EP1989279	WO2007US00914 20070112;	EXXONMOBIL RES & ENG CO [US]	G03G5/16; G01N21/00	Fourier transform infrared (ftir) chemometric method to determine cetane number of diesel fuels containing fatty acid alkyl ester

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	US20060759410P 20060117; US20070651184 20070109			additives
US2008303348	US20080131106 20080601; US20070942522P 20070607; US20070955466P 20070813; US20070956083P 20070815	FALCON GROUP LLC [US]	H02J3/00	A system for continuously generating baseload electrical energy entirely from renewable resources and transmitting the generated electrical energy to a transmission grid includes, in combination, a first energy generation device for continuously generating electrical energy output, which has a bio-mass fuel supply requirement for generating the electrical energy. One or more additional energy generation devices provide, as available, intermittent electrical and thermal energy for substituting, or supplementing, the electrical energy output of the first energy generation device, and for supplementing the fuel supply requirement for the first energy generation device. A switching device ensures a least-cost generation of baseload electrical energy from the generating system by selectively using the output of the first energy generation device or, as available, the one or more additional energy generation device for substituting, or supplementing, the electrical output of the first energy generation device, and selectively supplementing the fuel supply requirement of the first energy generation device providing, at a minimum, a baseload electrical energy output exclusively from renewable energy resources. A redundant supply of combustible bio-mass fuel assets are assured by a bio-mass harvesting and logistics system which supplies such fuels directly from the source to the first energy generation device for combustion. Effluent gasses containing CO2 from bio-mass combustion are sequestered in a body of fluid containing micro-algal bodies and light-emitting sources for causing, by photosynthesis in the presence of CO2, an increased mass of algal bodies by absorption of the CO2 and the emission of free oxygen. The increased mass of algal bodies are removed from the fluid body and used for the production of bio -diesel fuel. A method of operating an entirely renewable sourced electric power generation and transmission business is also provided.

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JP2008239941	JP20070110977 20070325	FIELD TECHNOLOGY KENKYUSHITSU [JP]; UNIV HOKKAIDO [JP]; HOKKAIDO [JP]	C10L1/02; B01J23/02; B01J37/08; C07C67/03; C07C69/24; C11C3/10	PROBLEM TO BE SOLVED: To provide a process for producing a fatty acid methyl ester as a biodiesel fuel that can solve such problems as the danger to a man in handling each of catalysts used in the production of a fatty acid methyl ester , the decrease in a yield due to the production of a surface active component and a high cost of the catalyst. - SOLUTION: The fatty acid methyl ester as a biodiesel fuel is produced by using various kinds of slag discharged from an ironworks as a catalyst and subjecting fats and oils to transesterification with methanol. In addition, the activity of slag as a catalyst can be increased and the reaction efficiency can also be increased by subjecting various kinds of steel slag to high temperature treatment in an inert gas or to dry quenching without using water. - COPYRIGHT: (C)2009,JPO&INPIT
DE102006050204	DE200610050204 20061025	FLOERCHINGER OTTO [DE]	F01C9/00	The engine has a rotation valve system that overextends a supply of working chambers. A crankshaft is directly and jointly utilized for an electric generator. The valve system is installed in a swinging-vane hollow axle at side walls. A crankshaft area is formed with the electric generator for a hybrid model, where the engine is operated based on a four-chamber principle such as double-acting two-cylinder principle. A swinging-vane is displaced at an outer edge for producing a force-action
CN201125231Y	CN20072008286U 20070921	FUJIAN LENGSHU PETROCHEMICAL E [CN]	C10G3/00	The utility model provides a mobile type bio -diesel production equipment for preparing bio -diesel with recovery grease and methanol reaction. The production equipment uses a pipe type reacting furnace as main equipment, all equipment are installed in a frame convenient for convey equal to a container in size. The suit equipment provided by the utility model are concentrated in a frame equal to a container in size, and is convenient to convey and put into production. The mobile type bio -diesel production equipment reaches request of standardized equipment and standardized technique, has low cost and high return benefit.
US2008160593	US20070966917 20071228; US20060877786P 20061229	GENIFUEL CORPORATION [US]	C12P5/00; C10L1/08; C12M1/00	A process for production of biofuels from algae can include cultivating an oil-producing algae by promoting sequential photoautotrophic and heterotrophic growth. The method can further include producing oil by heterotrophic growth of algae

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				wherein the heterotrophic algae growth is achieved by introducing a sugar feed to the oil-producing algae. An algal oil can be extracted from the oil-producing algae, and can be converted to form biodiesel .
WO2008083352	US20060877774P 20061229	GENIFUEL CORPORATION [US]; OYLER JAMES R [US]	C12N1/12; C02F1/32	A process for production of biofuels from algae can include cultivating an oil- producing algae by promoting sequential photoautotrophic and heterotrophic growth. The method can further include producing oil by heterotrophic growth of algae wherein the heterotrophic algae growth is achieved by introducing a sugar feed to the oil- producing algae. An algal oil can be extracted from the oil-producing algae, and can be converted to form biodiesel .
US2008221344	US20080074441 20080304; US20070904946P 20070305	GLEASON RODNEY J [US]; WORRELL ALBERT S [US]	C07C51/00	A method for producing biofuel by a transesterification reaction of an alcohol and a triglyceride such as an oil or fat is carried out at supercritical conditions in a reactor using a stoichiometric excess of alcohol. The reaction products of biofuel and gaseous mixture of glycerine and alcohol are re-cycled through a series of pre-heaters to sequentially raise the temperature and pressure of the reaction mixture prior to delivery to the reactor. Any excess alcohol after separating and recovering gaseous glycerin therefrom is recycled and mixed with "fresh" alcohol. Preferably, the process is a non-catalytic continuous process.
BRPI0605454	BR2006PI05454 20061127	GMG MOTOR E GERADOR DIESEL LTD [BR]	H02K5/04; H02K47/04	Aperfeiçoamento introduzido em gerador móvel composto por duas células, compreendido por um corpo principal, constituído a partir de um container que acondiciona internamente uma plataforma sobre a qual são posicionados dois motores dotados de sistema de injeção eletrônica alimentados por diesel, biodiesel puro ou misturado com diesel, acondicionado em um reservatório de combustível disposto na secção traseira, enquanto a secção dianteira detém inferiormente uma caixa de forþa sobre a qual verifica-se um painel de controle, sendo que o dito container provido, em suas seções laterais e secção dianteira, de portas.
EP1989278	WO2007EP01688 20070227; US20060777303P 20060228	GRACE GMBH & CO KG [DE]	C10L1/02; C11C3/00; C11C3/02	Physical refining process using adsorbent particles for the production of biodiesel fuel

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CN101289628	CN20081050034 20080610	HAINAN XINGHUO BIOLOG ENERGY C [CN]	C10G3/00; C11C3/04	The invention relates to a method for manufacturing biodiesel oil by mixed fatty acid. The method is as follows: firstly, animal and plant oil waste materials, soapstock, acidified oil and edible recovery oil are mixed to remove mechanical impurities, and refined oleic acid and mixed fatty acid are fractionated through pretreatment; then, the mixed fatty acid is added in an esterifying agent to carry out esterification through three sets of vibration tube-type continuous esterificators; crude methanol is reclaimed and then is pumped into a methanol scrubbing tower to be washed by methanol; and ester phase matter is fed in a methanol recovery tower to distill residual methanol, and then is fed in a flash fractionating tower to fractionate a biodiesel oil finished product. Pretreatment hydrolysis is adopted to fractionate 40 to 60 percent of refined oleic acid which is about 10,000 yuan/ton according to market price and has higher market value; the method can increase the economic benefits of a biodiesel oil enterprise and reduces the composite cost of biodiesel oil production; a vibration tube-type continuous esterification process has short esterification time (only 1.5 hours) and can save a great deal of energy sources; moreover, the yield of fatty acid methyl ester is high and can reach to above 98 percent, and product quality can meet the requirements of the national BD100 standard.
CN101289627	CN20081050033 20080610	HAINAN XINGHUO BIOLOG ENERGY C [CN]	C10G3/00; C10G29/20; C11B3/00	A method for reducing the acid value of biodiesel oil is characterized in that: rectification of crude fatty acid methyl ester or fatty acid ethyl ester is carried out; a deacidification agent occupying 0.02 to 4 percent of the total weight of fine fatty acid methyl ester or fatty acid ethyl ester is added after the rectification; the mixture is gradually heated up to 60 to 80 DEG C inside a stirring reaction kettle, and is put in a settling tank when the stirring reaction is carried out for 0.2 to 0.5 hours; after 2-hour settlement, the lower-layer deacidification agent is discharged; the acid value of an upper layer is measured, and the upper layer is put in a finished product tank after the acid value is up to standard; and the deacidification agent can be used repeatedly. The method is simple and does not need complex equipment; meanwhile, the method has low production cost and ideal

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				deacidification effect, and the diesel oil manufactured by the method accords with national standard; the separated deacidification agent can be used repeatedly to produce naphthenic acid amide which is a chemical raw material and can increase the economic benefits of a biodiesel oil enterprise. Tests and a standard method adopted to measure the acid value of biodiesel oil before and after deacidification show that the acid value of biodiesel oil can be reduced more than 90 percent when deacidified through adopting the method.
CN101319170	CN20081064956 20080718	HARBIN YIFENG ENVIRONMENTAL PR [CN]	C11C3/04; C07C69/24; C10L10/00	The invention aims at providing a diesel emission reduction synergist which is capable of reducing harmful gases in emitted exhaust gas with low viscosity, good volatility, easy atomization and sulfur content lower than that of diesel of the same grade. The diesel emission reduction synergist takes fatty acid methyl ester as a raw material. The fatty acid methyl ester is prepared through a reproducible alcohol mixture which consists of linear alcohols and isomer alcohols having 5-14 carbon atoms and has an esterification reaction with foots oil under a catalysis condition. The diesel emission reduction synergist is divided into three components according to temperature, and the three components are blended in proportion to form the diesel emission reduction synergist. The diesel emission reduction synergist which can solve the problems of excess sulfide emission and black smoke formed by end gas can reduce the sulfide content in the end gas by more than 50 percent. Due to high oxygen content, the diesel emission reduction synergist enables carbons in multi-ring macromolecular aromatic hydrocarbons with difficulty decomposition and combustion to burn sufficiently, thereby increasing output power and improving the efficiency of diesel.
CN101307262	CN20081140566 20080714	HENAN RUNHENG BIOLOG SOURCE CO [CN]	C10L1/04; C10L1/183	The invention belongs to the synthetic fuel field, in particular relating to high calorific value biosubstance liquid fuel. The liquid fuel is prepared by raw materials with the following mass portions: 20 to 50 portions of bio -diesel , 10 to 30 portions of fuel oil, 20 to 40 portions of coking wash oil, as well as antioxidant and acidity regulator which respectively have a ratio of 0-0.0001 to 1 with the total mass of the raw materials. The high calorific

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				value biosubstance liquid fuel has high combustion value, low cost, simple preparation, and no environmental pollution and no toxicity during the combustion, ensures that main compositions can be regenerated, has high biodegradation rate, adapts to the need of the market, is ideal novel fuel, and deserves to be popularized.
CN101307263	CN20081140567 20080714	HENAN RUNHENG BIOLOG SOURCE CO [CN]	C10L3/00; B01J21/06; C10L1/183	The invention belongs to the bio-energy field, in particular relating to bio -diesel and a method for preparing the same. The bio -diesel is prepared by raw materials with the following volume portions: 80 to 95 portions of shiny-leaved yellowhorn oil, 5 to 30 portions of methanol, 1 to 2 portions of catalyst, as well as antioxidant and acidity regulator which respectively have a ratio of 0-0.0001 to 1 with the total volume of the raw materials. The method utilizes the shiny-leaved yellowhorn oil as raw material, provides a new approach for preparing the bio -diesel , has small energy consumption, and is convenient to operate.
CN201104075Y	CN200720918 58U 20070912	HENAN RUNHENG BIOLOG SOURCE CO [CN]	F25J5/00; C10G3/00; F25J3/02	The utility model relates to a separation cooling system used during the preparation process of biodiesel , wherein, a separation plant and a cooling plant are separately arranged; an inlet of the cooling plant is connected with an outlet for objects which are waiting for condensation and generated by the separation plant through a pipeline; the cooling plant is a horizontal shell and tube condenser. The separation cooling system has a simple structure; the condenser can be self-processed and no complete equipment is necessary to purchase; the cooling efficiency is high; the applicable occasion is wide; the separation cooling system is more suitable for indoor use and greatly saves building costs of factories.
CN201102946Y	CN200720918 57U 20070912	HENAN RUNHENG BIOLOG SOURCE CO [CN]	C10G3/00	The utility model relates to a biodiesel reaction system, comprising a reaction vessel and a reclaiming system of distillation column methanol. The reaction vessel is provided with an inlet which is connected with the inlet of distillation column. The terminal of the reclaiming system of distillation column methanol is connected to the reaction vessel. Compared with the past system, the utility model can reduce the methanol content of the feeding, increase the feeding content of the fatty acids

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				mixture, improve the production ability, shorten the separation time of the distillation system, reduce the energy consumption, greatly shorten the reaction time, reduce the production of the byproduct and reduce the process cost.
CN101225414	CN20081049033 20080109	HENAN UNIVERSITY OF TECHNOLOGY [CN]	C12P7/62; C12P33/00	The invention relates to a method to extract a natural vitamin E, a phytosterin, and a fatty acid methyl ester by the enzyme catalysis and the molecular distillation, which is characterized in that a triglyceride in a distillate which is deodorized from a vegetable oil is hydrolyzed into a fatty acid through a lipase, a methanol is catalyzed by the lipase and the fatty acid is esterified and generated into a fatty acid methyl ester , and the natural vitamin E and the phytosterin are produced when the methanol and the fatty acid methyl ester are processed by filtering, desolventizing, freezing and removing the phytosterin, and removing the fatty acid methyl ester through the secondary molecular distillation. The the extraction method of natural vitamin E, phytosterin, and fatty acid methyl este, compared with the prior art, has the advantages of adopting the process that the oil is catalyzed and hydrolyzed first and then the enzyme catalyzes the fat to be esterified and to be processed by the secondary molecular distillation, no producing wastewater, shortening the esterification time, increasing the natural vitamin E content, deploying the secondary freezing and crystallization to remove the phytosterin with high recovery rate of phytosterin, and beneficially increasing the purity of the vitamin E.
CN101314721	CN20081058279 20080414	HENG TIAN [CN]	C10G3/00; B01J27/00; C11B3/10	The invention relates to a method for producing bio -diesel by using rubber-seed oil and the process thereof, in particular to a method for preparing a diesel substitute, also called bio -diesel , which is an ester prepared by the reaction between rubber-seed oil as the main materials and alcohol in the presence of acid or base catalyst. In the method, firstly, the functional group in rubber-seed oil is protected by alcohol in the presence of inorganic acid or inorganic base due to the complex component of the rubber-seed oil so as to ensure that the transesterification reaction using alcohol is carried out in the presence of base or acid catalyst. First, the process is characterized in that the

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				functional group in rubber-seed oil is protected by alcohol in the presence of the inorganic acid as the catalyst, and then the transesterification reaction using alcohol is carried out in the presence of the inorganic base as the catalyst. Second, the process is characterized in that the functional group in rubber-seed oil is protected by alcohol in the presence of the inorganic base as the catalyst, and then the transesterification reaction using alcohol is carried out in the presence of the inorganic acid as the catalyst. Accordingly, the rubber-seed oil can be efficiently and economically transformed to bio -diesel through simple chemical reaction.
CN201140069Y	CN20082010102U 20080108	HUAMIN LI [CN]	B01J19/08; B01F11/02; B01F13/08	The utility model relates to an esterification and emulsion device, which belongs to the chemical mechanical field and can be applied to the field of chemical industry, wine making, oil preparation and the like. The esterification and emulsion device is structurally characterized in that the esterification and emulsion device is mainly formed by three portions, namely a mixing preheating portion, an ultrasonic magnetic activation portion and a magnetic rotary radiating microchannel microwave radiation portion, and transesterification reaction products can be obtained by esterification reaction to liquid substances without adding any catalyst. The size of a micro-machine of the esterification and emulsion device is as large as a writing desk, the esterification and emulsion device can prepare high-grade white spirit and biodiesel indoors, the day output can reach 4-5 tons, if consuming domestically, a series of troubles can be avoided, and output and scale of production can be enlarged unlimitedly.
CN101249447	CN20081070768 20080314	HUAQIAO UNIVERSITY [CN]	B01J27/053; B01J37/025; C07C67/03; C07C67/08	The invention discloses a method for preparing a novel solid acid catalyst. The method adopts porous high temperature-resistance media as carriers and includes adding soluble sugar or starch solution; evaporating to dryness for a plurality of times; igniting; washing in water; drying; reacting with concentrated sulfuric acid; washing until a neutral condition with hot water; filtering; and drying to obtain the novel solid acid catalyst. The obtained solid acid catalyst is linked with sulfonic groups and loaded on the porous high temperature-resistance medium based on

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				hydrophobic amorphous carbon structure prepared by calcining different glycosyl groups, and has the advantages of porosity, large specific surface area, even particle size and easy separation and filling into a tubular reactor. The catalyst has an activity higher than the conventional solid acid catalyst which can be reutilized and easily recovered and is an excellent catalyst for preparing biodiesel oil from waste edible oil such as trench oil and acidification oil.
WO2008150152	WO2008MY00008 20080205	HUSSAIN RUSLEE BIN [MY]	C10L1/02; C10L1/08; C10L1/18	The invention discloses a method and a process to cost effectively manufacture biodiesel from refined vegetable oil via continuous transesterification by attaching a specially designed low temperature and low pressure waterless continuous biodiesel unit at vegetable oil refinery by Unking pipelines from the refined oil bulk stofage tank (1) directly to the reactor (9), thus eliminating the need to transport the refined oil feedstock, erecting a new storage tank facility, putting-up a new steam boiler and providing a huge land area as in the case of a new plant facility for the commercial production of palm biodiesel . Waste refinery heat is utilized by heat exchanger (7) to minimize the fuel use by thermal oil heater (8) for heating purposes in the specially designed reactors (9), (10), (11), (12), (13), (14), (15), biodiesel purifier (16) and glycerol purifier (17). As the processes of palm diesel separation and purification are continuous and waterless, there is no need for a water treatment plant and big tanks for big production capacity.
JP2008266544	JP20070133470 20070419	ICS KK [JP]	C11C3/10	PROBLEM TO BE SOLVED: To develop a usage of rice bran for producing BDF (biodiesel fuel), which uses rice bran as a direct raw material, without using an oil produced from rice bran, and thus does not need a pretreatment for preparing a free fatty acid, etc., and does not discharge environmental toxins. - SOLUTION: The usage of rice bran comprises extraction and reaction of an oil component of rice bran with an overheated vaporized alcohol, followed by the gas phase extraction of BDF. - COPYRIGHT: (C)2009,JPO&INPIT
JP2008266510	JP20070114130 20070424	IDEMITSU KOSAN CO [JP]	C10L1/02; C10L1/19	PROBLEM TO BE SOLVED: To provide a kerosene composition which can mainly use a plant-originated fatty acid alkyl ester as a

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				fuel to reduce loads on environments, and can improve combustibility to prevent the production of tars on a wick, when used in a wick type stove. - SOLUTION: This kerosene composition contains a fatty acid alkyl ester in an amount of 2 to 20 vol% based on the total amount of the composition, wherein the main component of the fatty acid alkyl ester is a fatty acid alkyl ester represented by general formula (I) (wherein, R<SP>1</SP>is a 5 to 9C hydrocarbon group; R<SP>2</SP>is a 1 to 4C hydrocarbon group). ; COPYRIGHT: (C)2009,JPO&INPIT
JP2008266511	JP20070114131 20070424	IDEMITSU KOSAN CO [JP]	C10L1/19; C10L1/04; C10L1/183	PROBLEM TO BE SOLVED: To provide a kerosene composition which can be compounded with a fatty acid alkyl ester largely lowering combustibility, when compounded with a kerosene base material, and is excellent in an effect for reducing environmental loads. - SOLUTION: This kerosene composition contains (A) a fatty acid alkyl ester in an amount of 2 to 20 vol% and (B) an antioxidant in an amount of 10 to 500 mass ppm, on the basis of the total amount of the composition, wherein the main component of the fatty acid alkyl ester is a fatty acid alkyl ester represented by general formula (I) (wherein, R<SP>1</SP>is a 10 to 11C hydrocarbon group; R<SP>2</SP>is a 1 to 4C hydrocarbon group). ; COPYRIGHT: (C)2009,JPO&INPIT
WO2008130974	US20070912089P 20070416; US20070982995P 20071026; US20080022793P 20080122	IMPERIUM PROCESS TECHNOLOGIES [US]; PLAZA JOHN P [US]; GOODALL BRIAN L [US]	C10L1/18; B01J19/18	In embodiments of the present invention, systems for producing a biodiesel product from multiple feedstocks may include a biodiesel reactor, a decanter, a flash evaporator and a distillation column. In other embodiments of the present invention, a process for producing a biodiesel comprises distilling a biodiesel reaction product to remove tocopherols and sterol glucosides and, optionally, adding biodiesel stabilizers to the resultant biodiesel to enhance thermal stability. The components of the system are interrelated so that parameters may be regulated to allow production of a custom biodiesel product.
EP1985684	EP20020380270 20021220; ES20020000103 20020118	IND MAN S A [ES]	C10L1/02; C07C67/08; C10G3/00; C10L1/19;	Procedure to generate biodiesel fuels with improved properties at low temperature by the transesterification of triglycerides with alcohols such as methanol or ethanol, optionally in the presence of methyl or ethyl acetates of fatty acids and an inert solvent, to

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			C10L10/14; C11C3/00; C11C3/10	produce methyl or ethyl esters of fatty acids, glycerine and, where appropriate, glycerine triacetate, followed by the separation of crude glycerine that is reacted with acetic acid or methyl or ethyl acetates to produce glycerine acetates. The glycerine acetates are mixed with methyl or ethyl esters of fatty acids in concentrations of approximately 0.5-20% by weight to obtain a biodiesel with improved properties at low temperatures.
DE202008009048U	DE200820009048U 20080704	INGENDOH AXEL [DE]	C10L1/02	Russarmer Biodiesel aus pflanzlichen Ílen mit niedrigem CFPP Wert
CN101225322	CN20081008283 20080218	INST OCEANOLOGY CHINESE ACAD [CN]	C10G3/00	The invention discloses a preparation method of biodiesel by using Kosteletzkya virginica seed oil, which comprises the following process: (1) catalyst concentrated sulfuric acid, Kosteletzkya virginica seed oil and methanol are put into the reaction vessel for reaction, the temperature is 58 to 63 DEG C, the proportion of the concentrated sulfuric acid in the Kosteletzkya virginica seed oil is 2.0% to 2.5%, the mass ratio of the methanol to the Kosteletzkya virginica seed oil is 1:3 to 1:5, and the reaction time being 120 to 150 minutes; (2) reactant obtained in the step (1) is stratified in static into two layers; wherein the upper layer is bio diesel and methanol, and the lower layer is glycerol, concentrated sulfuric acid, small amount of saponins and methanol; (3) the upper layer liquid is passed through methanol recovery distillation column for methanol recovery, and then is washed by water with at 5 to 10 DEG C higher than the oil temperature; when the washing water becomes clear, dehydration is conducted, and the bio diesel product is obtained. The preparation method of biodiesel by using Kosteletzkya virginica seed oil has the advantages of mild reaction conditions and high product yield.
CN101314730	CN20081022481 20080715	INST OF CHEMICAL INDUSTRY OF F [CN]	C10G32/00	The invention discloses a method for ultrasonic-aided preparation of antioxidant preformed liquid for bio -diesel , which comprises the following steps: mixing an antioxidant for bio -diesel with special bio -diesel at a weight ratio of 1:(5.67 to 99), ultrasonic-reinforced processing at room temperature for 1 to 15 min to make the antioxidant rapidly dissolved and dispersed in the bio -diesel to form the antioxidant preformed liquid with good stability,

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				wherein the antioxidant preformed liquid contains antioxidant 1 to 15 percent. The antioxidant preformed liquid can be added into bio -diesel product at a certain ratio as liquid antioxidant, and the content of the antioxidant in the bio -diesel product is 0.02 to 0.20 percent. The ultrasonic-aided preparation method is simple, rapid and easy. The prepared preformed liquid has stable performance, and can be added into bio -diesel product for large-scale production of bio -diesel .
CN101255344	CN20071051600 20070302	INST OF OIL CROPS RES CHINESE [CN]	C10G3/00; C07D311/72; C07J75/00	The invention proposes a biological diesel and vitamin E, sterol combined production by vegetable fat, which pertains to oil chemistry field. The invention process includes steps of degumming, methyl esterification, water washing, cold precipitation, dehydration, molecular distillation. The invention uses vegetable fat as raw material, directly esterify triglyceride and free fatty acids together without refining step, and adopt molecular distillation to obtain biological diesel and natural vitamin E, sterol simultaneously, which is a novel production process that simplify procedures, reduces production cost and increases economic benefit.
CN101280242	CN20081114414 20080602	INST PROCESS ENG CAS [CN]	C11B7/00; C10G3/00	Disclosed is a method of separating the fatty acid from oil, which belongs to the bio -diesel preparation technical field, using animal and vegetable oils. The method of separating the fatty acid from oil is characterized in that organic or inorganic alkali with low boiling point is adopted as the main deacidification agent which is mixed with water soluble solvent to prepare separation extraction agent which is enabled to be reacted with the fatty acid to generate water soluble organic salts; the water soluble organic salt solution is separated and heated to recover the fatty acid and the composite solvent; the composite solvent can be used repeatedly after preparation. Compared with other methods, the method of separating the fatty acid in oil has the advantages of good separation effect, recycle use of the separation extraction, economy, environmental protection and zero release.
CN101311247	CN20071099504 20070523	INST PROCESS ENG CAS [CN]	C10G3/00	The invention relates to a production method for rapidly preparing biodiesel by using a solvent for strengthening, which is characterized in that double-ether substances is introduced as a

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				co-solvent so as to lead triglyceride and lower alcohol to form a homogeneous reaction system, augment reaction interface, accelerate reaction speed and reduce mechanical agitation. The co-solvent has the advantages of moderate boiling point, convenient recovery, high safety, and the like, and is applicable to industrial production.
US2008241902	US20080061038 20080402; US20070921327P 20070402	INVENTURE CHEMICAL INC [US]	C07C67/00; C12P7/06	The present invention relates to a method for producing fatty acid alkyl esters as well as cellulosic simplified sugars, shortened protein polymers, amino acids, or combination thereof resulting from the simultaneous esterification and hydrolysis, alcoholysis, or both of algae and other oil containing materials containing free fatty acids (FFA), glycerides, or combination thereof as well as polysaccharides, cellulose, hemicellulose, lignocellulose, protein polymers, or combination thereof in presences of an alcohol and an acid catalyst.
CN101215233	CN20081025709 20080109	JIANGMEN CANOLA CHEMICAL DEV C [CN]	C07C67/03; C07C69/003	The invention relates to a manufacturing technique of fatty acid ester, which employs polished fat to generate sulfated oil or crude fatty acids of leftovers. Glyceride is generated by the reaction of non-esterified fatty acid and glycerol, in the sulfated oil or the crude fatty acids, unsaponifiable doesn't react with glycerol, unsaponifiable and acylglycerol are seperated by employing the different boiling points of both, the boiling point of non-esterified fatty acid which does not react is lower than that of acylglycerol, and the non-esterified fatty acid which does not react is also separated, the purified acylglycerol is obtained, then, acylglycerol is used to react with methanol, and the fatty acid ester with relatively high purity can be obtained. sulfated oil and crude fatty acids are used to separate unsaponifiable via pre-esterification, the process of pre-esterification doesn't need catalyst, the content of the obtained fatty acid ester is not less than 98%, and the cost is low, and thereby the invention can be widely used in the field of biodiesel , fine chemicals and plasticizer. The invention not only recycles and reuses waste, but also decreases environmental pollution, simultaneously the invention has relatively high economic value.
US2008256844	US20070738479	JONES ALLEN [US]	C10L5/44	A candle formed of a composition comprising biodiesel . In

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	20070421			preferred implementations, the candle composition includes fatty alcohols, e.g., cetyl alcohol and cetearyl alcohol, in mixture with the biodiesel , to constitute a candle composition that can burned in a wicked or wickless form. The composition of biodiesel and fatty alcohols may include dyes and/or fragrances, to provide a candle article that is environmentally benign and of low cost.
CN101289626	CN20071048899 20070419	JUNHUA LONG [CN]	C10G3/00	The invention relates to a process for making biodiesel oil through making use of waste animal and plant greases. The process is characterized in that: reaction with methanol (ethanol) is carried out under the action of acid catalyst; and fatty acid formic ester (biodiesel oil) is generated through the five steps of (1) filtration and dehydration at normal temperature, (2) alcoholysis, (3) neutralization, (4) distillation and (5) phase separation. The process has easily obtained raw material, simple and convenient manufacturing technique and low cost, and can effectively solve the environmental pollution caused by inadequate utilization of waste animals and plants. Repeated verifications show that the biodiesel oil made through the process can be directly used in the prior diesel engine; moreover, the biodiesel oil has excellent service performance and less exhaust gas pollution, and can completely replace mineral diesel oil.
CN101333450	CN20071049359 20070625	JUNHUA LONG [CN]	C10G3/00	The invention relates to a method for producing bio -diesel oil without catalyst, which is characterized in that the method does not take corrosive acid or alkali as catalyst, and utilizes animal and vegetable oil (abandoned oil) to react under the action of alcohol so as to obtain the bio -diesel oil by pumping off the residual additive at the bottom through processes of (1) dehydration and purification, (2) heating, (3) preparing alcohol (methanol or ethanol) additive, (4) alcohol reaction and (5) precipitation at normal temperature. The method has advantages of easy obtaining of raw materials, changing waste into valuables, and reducing the hazard of hogwash oil on dining tables to human bodies, and the three wastes (waste residues, waste water and waste gases) will not be produced, the defects of the prior art are effectively overcome, the method also has considerable economic benefits, products can be directly used on

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				the current diesel vehicles and have high performance, and harmful gases are reduced by over 70 percent, so the bio -diesel oil is one of renewable energy resources searched by countries of the world, meanwhile, the depending on petroleum of economic development is lowered.
US2008178581	US20080016161 20080117; US20070885862P 20070119	JUON CO LTD [JP]	F01N3/035; C10G35/00; C10L1/04	Improving the beneficial use of waste material from a vegetation source, a biomass is fermented to produce a bio-fuel and carbon. The bio-fuel can be at least ethanol and bio -diesel and the resulting carbon can used to produce ink for printers. When the biomass is tree matter, a biocatalyst can extracted from the tree matter prior to fermentation. A component of the biocatalyst is used to cleanse internal combustion engine exhaust emissions by spraying the biocatalyst onto a exhaust emission gas. The sprayed exhaust emission gas can be filtered and the filtration by-product can be collected.
CN101302450	CN20081132407 20080715	KAILIANG ZHOU [CN]	C10L1/02; C10L1/182; C10L1/222; C10L1/23; C10L1/232; C10L1/30	The invention belongs to the fuel technical field, in particular relating to biosynthetic diesel fuel which takes animal and vegetable fat and alcohol substance and a method for preparing the same. The compositions by weight percentage of the biosynthetic diesel fuel are: 10 to 30 percent of the animal and vegetable fat, 10 to 30 percent of additives, 35 to 70 percent of methanol and 5 to 10 percent of dimethyl enther. The preparation method comprises the following steps that: various compositions of the additives are mixed so as to obtain the additives; the dimethyl enther and the methanol are mixed according to predetermined ratio so as to obtain mixture A; the additives and the animal and vegetable fat are mixed according to predetermined ratio, and cut and stirred so as to obtain mixture B; and the mixture A and the mixture B are mixed and cut and stirred so as to obtain the biosynthetic diesel fuel. The product of the biosynthetic diesel fuel greatly reduces the cost of the biodiesel because the price of the alcohol substance is much cheaper.
KR100858663B	KR20080012753 20080212	KIM JAE NAM [KR]	C10L1/32; C10G3/00	The device of manufacturing the bio -diesel with waste edible-oil
US2008171676	KR20070003691	KIM KWANG SOON	C10M107/28;	A grease composition using lubricating base oil that is

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	20070112; KR20070003692 20070112	[KR]; LEE MOON SIK [KR]	C10M109/00; C10M113/12; C10M169/00	biodegradable by microorganisms in nature and has an affinity to the human body is provided. More particularly, a distillation residue secondarily generated in production of biodiesel from vegetable oil (soybean oil and canola oil) is used as the lubricating base oil. The grease composition is produced by adding 1 to 20 wt % of additives to 100 to 95 wt % of distillation residues, which is generated in production of biodiesel , and 1 to 30 wt % of thickeners.
CN101297024	US20050730031P 20051026	KIRAM AB [SE]	C11C3/04; C07C68/08; C07C69/003; C10L1/02; C10L1/18; C11B13/00	There is disclosed a method for manufacturing fatty acid alkyl esters from tall oil comprising the steps of a) esterifying tall oil in at least one esterification reactor in the presence of an acidic catalyst and an C1 to C8 alcohol to form a crude product stream comprising fatty acid alkyl esters and H2O, b) separating H2O and alcohol from the crude product stream formed in step a) to form a dehydrated fatty acid alkyl ester product stream, and c) separating dehydrated fatty acid alkyl ester product stream from step b) into at least two product streams wherein one product stream is enriched in fatty acid alkyl esters and one product stream is enriched in resin acid compounds. There are disclosed fatty acid alkyl esters and resin acids manufactured by the method. Moreover there is disclosed a fuel composition and its use as an automotive fuel, said fuel composition comprises the fatty acid alkyl esters produced according to the present invention.
DE102007003344	DE200610059788 20061215; DE200710003344 20070117	KOERBER HELMUT [DE]	C10L1/02; C10L1/19	Die Erfindung bezieht sich auf ein Dieselkraftstoffgemisch, das als Hauptkomponente fossilen Dieselkraftstoff und/oder Biodiesel und/oder Pflanzen÷l enthõlt und an sich ³bliche Additive. Ausgehend von den Nachteilen des bekannten Standes der Technik ist es Aufgabe, eine alternative Gemischkomponente f³r Dieselkraftstoffe bereit zu stellen, die sowohl f³r fossile Dieselkraftstoffe als auch Biodiesel oder Pflanzen÷l geeignet ist, sich kosteng³nstig herstellen lõsst und die Anforderungen als reinen Bio-Treibstoff erf³llt. Ferner soll ein neuer Dieselkraftstoff bereitgestellt werden, der ein reiner Biotreibstoff ist. Hierzu wird als L÷sung vorgeschlagen, dass das Dieselkraftstoffgemisch als Gemischkomponente Oxalsõurediethylester (Diethyloxalat)

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				enthõlt. Ferner wird vorgeschlagen, Oxalsõurediethylester als Dieselkraftstoff zu verwenden, mit an sich ³blichen Zusõtzen f³r Dieselkraftstoffe. Bei einem Dieselkraftstoffgemisch mit fossilem Dieselkraftstoff als Hauptkomponente, das als Gemischkomponente Oxalsõurediethylester (Diethyloxalat) enthõlt, kann die Gemischkomponente in Einsatzmengen bis zu 25 Vol.-% zugesetzt werden. Bei Biodiesel als Hauptkomponente sollte der Anteil der Gemischkomponente jedoch nicht ³ber 50 Vol.-% liegen. Weiterhin kann Oxalsõurediethylester unverõnderten Pflanzen÷len in jedem Verhõltnis zugesetzt werden. Dadurch wird die Viskositõt des Pflanzen÷ls bzw. Kraftstoffgemisches deutlich erniedrigt. Der Zusatz von Oxalsõurediethylester wirkt sich ...
WO2008157226	US20070944283P 20070615	KOPROWSKI HILARY [US]; ANDRIANOV VYACHESLAV [US]; BORYSYUK MYKOLA [US]	A01H5/00; C12N15/82	The present invention relates to a genetically modified plant having an increased amount of oil in its green biomass as compared to the oil in the green biomass of its non-genetically modified counterpart. The plants may be used for producing bio-fuels such as biodiesel fuel.
US2008282687	KR20050092205 20050930; KR20060052699 20060612; WO2006KR03927 20060929	KOREA ENERGY RESEARCH INST [KR]	F01N3/20	The present invention relates to a heating device for exhaust gas in an internal-combustion engine, which is driven by using LPG, LNG, a volatile oil, a light oil, biodiesel or oxygenated hydrocarbon being DME, the device consisting of a catalyst reactor reformer, an exhaust gas suction section and the second fuel supply device. The exhaust gas suction section is mounted for using oxygen included in the exhaust gas. When the heating device is driven, air and fuels are supplied to the catalyst reactor and the second fuel supply device via a single tube when the heating device is heated. The present invention provides with a heating device for exhaust gas capable of securing the durability of a heating device for exhaust gas and minimizing the amount of air supplied from the outside to the combustion reforming device by excluding carbon depositions in a tube due to a prolysis of LPG, LNG, a volatile oil, a light oil, biodiesel or oxygenated hydrocarbon being DME, and a method for driving the device.
CN101316989	KR20050092205 20050930	KOREA ENERGY RESEARCH INST [KR]	F01N3/02	The present invention relates to a heating device for exhaust gas in an internal-combustion engine, which is driven by using LPG,

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				LNG, a volatile oil, a light oil, biodiesel or oxygenated hydrocarbon being DME, the device consisting of a catalyst reactor reformer, an exhaust gas suction section and the second fuel supply device. The exhaust gas suction section is mounted for using oxygen included in the exhaust gas. When the heating device is driven, air and fuels are supplied to the catalyst reactor and the second fuel supply device via a single tube when the heating device is heated. The present invention provides with a heating device for exhaust gas capable of securing the durability of a heating device for exhaust gas and minimizing the amount of air supplied from the outside to the combustion reforming device by excluding carbon depositions in a tube due to a prolysis of LPG, LNG, a volatile oil, a light oil, biodiesel or oxygenated hydrocarbon being DME, and a method for driving the device.
EP1944353	KR20070003692 20070112	KOREA HOUGHTON CORP [KR]	C10M173/00; C10M109/00; C10M169/04; C10M177/00	A composition of a water-soluble metalworking fluid used in metal machining is provided. The water-soluble metalworking fluid is formed by adding 5 to 70wt% additives to 5 to 95wt% distillation residues that is generated in production of biodiesel and used as lubricating base oil, and 0 to 70wt% ion exchange water.
EP1944352	KR20070003691 20070112	KOREA HOUGHTON CORP [KR]	C10M169/00; C10M101/04; C10M109/00; C10M177/00	A grease composition using lubricating base oil that is biodegradable by microorganisms in nature and has an affinity to the human body is provided. More particularly, a distillation residue secondarily generated in production of biodiesel from vegetable oil (soybean oil and canola oil) is used as the lubricating base oil. The grease composition is produced by adding 1 to 20wt% of additives to 100 to 95wt% of distillation residues, which is generated in production of biodiesel , and 1 to 30wt% of thickeners.
JP2008156388	JP20060343573 20061220	KORUKURAABE KK [JP]	C10L1/02; B09B3/00; C05F11/00; C10L1/08; C10L3/06; C11C3/10	PROBLEM TO BE SOLVED: To provide a production system for products derived from rice comprehensively utilizing each component produced from the rice, to provide a method for production, to provide a system for production planning and to provide a method for production planning. - SOLUTION: Methanol 21, methane gas 22, a direct fuel 23 or compost 24 is produced from at least one of rice straw 1, chaff 2, rice bran 3 and milled rice 4. Furthermore, ethanol 28, lactic acid 27 or a

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				syrup 26 is produced from the milled rice 4. An oil and fat 25 is further produced from the rice bran 3. The produced methanol 21 and oil and fat 25 are subjected to synthesis to produce BDF (bio -diesel fuel) methyl 29a. The produced ethanol 28 and oil and fat 25 are subjected to synthesis to produce BDF ethyl 29b. The produced methanol 21 and lactic acid 27 are subjected to synthesis to produce methyl lactate 30a. The produced ethanol 28 and lactic acid 27 are subjected to synthesis to produce ethyl lactate 30b. - COPYRIGHT: (C)2008,JPO&INPIT
EP1972679	EP20030810944 20030708; DE20021052715 20021113; DE20021052714 20021113	LANXESS DEUTSCHLAND GMBH [DE]	C10L1/02; C10L1/183	A process for the improving the storage stability of biodiesel comprises dosing in a stock solution (I), comprising 15-60 wt.% 2,4-di-tert-butylhydroxy toluene (BHT) dissolved in biodiesel , to the biodiesel at a concentration of 0.005-2 wt.% BHT (with respect to the total solution of biodiesel). Independent claims are also included for: (1) the stock solution (I) and; (2) a process for the production of the stock solution (I), optionally containing other additives by the addition of liquid BHT to biodiesel at 70-120 [deg]C with stirring to a concentration of 15-60 wt.%.
KR20080062636	KR20060138661 20061229	LG HOUSEHOLD & HEALTH CARE LTD [KR]; SEOUL NAT UNIV IND FOUNDATION [KR]	C10G3/00; C10L1/32	Production method of biodiesel using supercritical alcohol
CN201144226Y	CN20072064966U 20071106	LI WANG [CN]	C10G3/00	The utility model discloses a device to process biodiesel , which comprises a series process loop, wherein, the series process loop consists of an esterification reactor, a methanol condenser, a duplex water absorber, a methanol storage tank, a high-performance cross-linked mixer, etc. A methanol supercharge pump is arranged between the methanol storage tank and the high-performance cross-linked mixer; a material supercharge pump is arranged between the esterification reactor and the high-performance cross-linked mixer. The duplex water absorber is capable of removing the water in the biodiesel esterification reaction, so that the reaction processes towards the positive direction to reduce the amount of methanol; the high-performance cross-linked mixer is capable of forcing the cross bonding of the

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				raw oil, methanol and the catalyst molecule to increase the intersolubility, thus better solving the problem of low yield in biodiesel processing with the prior art.
WO2008078769	JP20060353428 20061227	LION CORP [JP]; FUTAKUCHI HIDENORI [JP]; ICHIKAWA CHIAKI [JP]; MAENO KATSUHIRO [JP]	C11C3/10; C07C67/03; C07C69/24; C07C69/52	Disclosed is process for producing a fatty acid lower alkyl ester , which is characterized in that the reaction rate in a transesterification step is constant and is kept at a high level. The process comprises the steps of: (A) mixing a raw material oil-and-fat and a lower alkyl alcohol having a water-content of 1000 ppm or less at a [raw material oil-and-fat]/[lower alkyl alcohol] ratio of 100/5 to 100/12 by mass, and contacting the resulting mixture with a cation exchange resin continuously to esterify a free fatty acid contained in the raw material oil-and-fat, thereby producing an oil-and-fat having a reduced free fatty acid content; (B) adding a fraction of the lower alkyl alcohol which is discharged in the following step (D), an additional amount of the lower alkyl alcohol having a water content of 1000 ppm or less and an alkali catalyst to the oil-and-fat produced in the step (A) and agitating the mixture so that the water content of a mixture obtained in the step (B) becomes 5000 ppm or less, thereby producing a mixture of the oil-and-fat, the lower alkyl alcohol and the alkali catalyst; (C) subjecting the oil-and-fat and the lower alkyl alcohol contained in the mixture to the transesterification in the presence of the alkali catalyst to produce a fatty acid lower alkyl ester ; and (D) contacting the cation exchange resin used in the step (A) with the lower alkyl alcohol having a water content of 1000 ppm or less, thereby washing the cation exchange resin.
WO2008111915	SG20070001787 20070309	LIPICO BIOENERGY PTE LTD [SG]; WONG YEW CHOO [SG]; LIM CHEE SIANG [SG]	C10L1/00; C10L1/02; C11B1/04; C11B3/04; C11B3/06; C11C3/04; C11C3/10	The invention provides a process for the preparation of a biodiesel from a feedstock containing a triglyceride by transesterification of the triglyceride with a lower alkyl alcohol. The process comprises mixing the triglyceride with the lower alkyl alcohol in the presence of a catalyst in a high-shear mixer to form a reaction mixture, heating the reaction mixture in a heater, allowing the heated reaction mixture to react in a reactor to form a first crude transesterification product and glycerol, separating the glycerol from the first crude transesterification product and subjecting the first crude transesterification product to further

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				treatments to obtain the biodiesel . The separation of the glycerol from the crude transesterification product is carried out in the reactor that is configured in a manner that allows the glycerol to be removed continuously from the reactor.
WO2008145474	DE200710024706 20070525	LOEDIGE MASCHB GES MIT BESCHRA [DE]; SCHMIDT ALFONS [DE]; SICKELMANN HANS-JUERGEN [DE]; GROB ARMIN [DE]	C10B19/00; C10B47/34; C10B49/22	The invention relates to a method and device for thermally disintegrating a starting material, particularly for disintegrating animal meal, oil sludges such as from tank cleaning, auto fluff, basic glycerin such as from biodiesel production, paint sludges from paint shops, contaminated soils, coated wood, or plastics such as Plexiglas. According to the present method, organic starting materials are very thoroughly thermally disintegrated in nearly all cases. The very thorough disintegration is achieved by the addition of foreign particles such as metal spherules to the starting material, which is thermally disintegrated.
CA2619211	US20070670538 20070202	LOMBARD JOHN JOSEPH [US]	C09D195/00; B05D1/02; B05D1/28; C08J11/06; E04B1/64; E04G21/28	The present invention involves the recycling of asphalt based roofing materials by comminuting the roofing material and subsequently separating a rock component from an asphalt component of the roofing material. The asphaltic component is separated into a feed stream having a mesh size of less than about 50 mesh while the rock component is separated into a feed stream having rocks in the size of 10 mesh or larger. A portion of the comminuted material may be recycled back for additional comminuting. The separated asphaltic component is placed in contact with the solvent to dissolve the asphalt in the asphaltic component providing a mixture of filler, fiber and dissolved asphalt. The liquid may then be applied to a surface of a wall to form a substantially continuous solidified film on the wall to provide waterproofing and an air barrier. <SDOCL LA=EN> Claims: 1. A method of applying an asphalt coating: a) comminuting roofing material containing asphalt and rock particles; b) separating rock from the comminuted roofing material to provide an asphaltic component containing less than about 20% by weight rock larger than about 10 mesh in size; c) forming said asphaltic component into a liquid material; and d) applying the liquid material to a surface to form a substantially continuous water resistant coating. 2. The method of claim 1

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				wherein the asphaltic component containing less than about 10% by weight of rock larger than about 10 mesh in size and said asphaltic component containing fibrous filler. 3. The method of claim 2 wherein the asphaltic component being in particulate form with at least about 80% by weight being of a mesh size of less than about 50 mesh prior to forming the liquid material therewith. 4. The method of claim 3 wherein the liquid is formed by dissolving an asphalt portion of the asphaltic component with solvent. 5. The method of claim 4 wherein the solvent including at least one of kerosene, biodiesel and naptha. 16 6. The method of claim 4 wherein the applying of the liquid material being by at least one of spraying, rolling or brushing. 7. The method of claim 1 wherein the comminuting is done at least partially by grinding with a hammermill. 8. The method of claim 7 wherein the hammermill having a plurality of output streams including first and second output streams, at least one of the output streams being separated into an asphalt component stream and a rock component stream. 9. The method of claim 8 wherein the first output stream being a return stream and the method further including returning the first output stream to the comminuting step. 10. The method of claim 9 wherein the second stream including asphaltic component and rock, and the method further including separating the rock from the asphaltic component with the separated asphalt component having a mesh size of less than about 50. 11. The method of claim 10 wherein the plurality of output streams including a third output stream including asphaltic component fines removed by an air stream. 12. The method of claim 11 wherein the asphaltic component after the separating step including fibers, mineral filler and asphalt. 13. The method of claim 12 wherein the liquid being applied to a concrete wall surface. 14. The method of claim 12 wherein the liquid being applied to a polymeric foam/concrete composite wall surface. 15. The method of claim 14 wherein liquid contacting the polymeric foam. 17 16. The method of claim 15 wherein the composite wall being a building wall above grade. 17. The method of claim 3 wherein the liquid is formed by heating the asphaltic component. 18. The method of claim 17 wherein the liquid asphaltic

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				component is applied to a roof to form the coating. 19. The method of claim 18 wherein at least a portion of the separated rock is applied to the coating for adhesion to the coating. 20. A method of building a structural exterior wall, said method comprising: forming a wall at least partially of cast concrete, said wall having an exterior surface; forming a liquid of ground asphaltic roofing material by comminuting shingle material and separating a rock component from an asphaltic component, said asphaltic component having less than about 20% by weight rock component, and dissolving the asphaltic component in an organic solvent to form the liquid; applying a coating of the liquid to an exterior surface of the wall; and allowing the coating to solidify on the surface as a substantially continuous film. 21. A liquid coating material comprising: asphalt derived from comminuted roofing material; an organic solvent in an amount sufficient to make a liquid of the asphalt and solvent wherein substantially all of the asphalt is in solution, said solution having viscosity adequate for 18 applying a coating to a surface that when solidified forms a water impermeable substantially continuous film; and fibers derived from the comminut
WO2008124390	US20070910044P 20070404	LUBRIZOL CORP [US]; STARTIN SARAH J [GB]; HOBSON DAVID [GB]	C10L1/22; C10L1/18	The present invention provides a fuel composition comprising a C1-4 alkyl fatty acid ester , a nitrogen containing detergent, and a phenolic antioxidant. Additionally, the present invention provides for a method of supplying to an internal combustion engine (i) a C1-4 alkyl fatty acid ester ; (ii) a fuel which is a liquid at room temperature other than (i); (iii) a nitrogen containing detergent; (iv)and a phenolic antioxidant.
EP1970395	US20070894995P 20070315; US20080045372 20080310	MAGNI IND INC [US]	C08G18/80; C08K3/38; C09D175/04	One embodiment of the invention includes a product including a coating comprising (a) a primary resin and a blocked isocyanate, and (b) at least one bio -diesel fuel degradation product neutralizing material.
US2008282604	MY20070000757 20070515	MALAYSIAN PALM OIL BOARD [MY]	C10L1/32	A fuel composition comprising a water-in-oil phase emulsion comprises bio -diesel ; water; and at least one type of polymeric surfactant.
CN101213275	KR20050059141 20050701	MAN LEE YONG [KR]	C10L1/14	Fuel composition containing bioethanol and biodiesel for internal combustion engine

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WO2008138114	US20070924358P 20070510	MARSHALL RICHARD M [CA]	C02F3/28; A23K1/00; B09B3/00; C02F11/04; C05F7/00; C05F11/00; C10G3/00; C10G21/00; C12P5/02	A process and apparatus for assisting the extraction and processing of biodiesel oil from organic feedstock includes: providing crushed oil-bearing organic feedstock meal from which has been extracted a first amount of biodiesel oil wherein the meal retains a second amount of entrained oil; forming a meal slurry containing said meal and passing the slurry to an anaerobic digester; apaerobically digesting the meal slurry so as to convert said second amount of entrained oil to produce heat, methane gas, and organic fertilizer or oil-free cattle feed; providing an electrical generator and employing the methane gas for at least the production of electricity by burning the methane gas in the electrical generator which is adapted to convert heat to electricity and re-cycling at least some of the electricity.
EP1985650	WO2007JP00043 20070131; JP20060024447 20060201	MARUO CALCIUM [JP]; SUMITOMO CHEMICAL CO [JP]	C08J9/00; C01B25/32; C01F5/14; C01F11/18; H01M2/16	An object of the present invention is to provide a method for producing an alkyl ester of a fatty acid from a fat or oil, of which main component is a triglyceride, and an alkyl alcohol under mild conditions in a high reaction efficiency, and the alkyl ester of a fatty acid can be effectively utilized as a diesel fuel oil, an industrial raw material or the like, the method further being capable of utilizing on an industrial scale, in which post-treatment steps for removing a catalyst component can be simplified or omitted. For this purpose, the method for producing an alkyl ester of a fatty acid of this invention includes the step of carrying out a transesterification reaction between a fat or oil and an alcohol in the presence of a base catalyst containing calcium oxide, characterized in that the method includes the step of contacting the base catalyst with the alcohol, to carry out an activation treatment thereof in advance of the reaction.
WO2008089321	US20070885361P 20070117	MCCALL JOE [US]	C12P1/00	A photobioreactor includes a cultivation zone configured to contain a liquid culture medium and facilitate growth of a microalgae biomass, a plurality of parallel edge-lit light transmitting devices mounted within the cultivation zone, and a collection zone oriented in relation to the cultivation zone such that at least a portion of the liquid culture medium and microalgae from the cultivation zone may be periodically harvested. Methods for illuminating algae, for dissolving materials into an algae

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				medium, for extracting oil from algae, and for producing biodiesel from algal oil are also provided.
EP1976960	WO2007IB00104 20070116; IT2006MI00082 20060119	MERLONI PROGETTI S P A [IT]	C10G3/00; C07C67/02; C07C69/24; C10G21/16; C11B7/00	Process for the preparation of biodiesel
US2008268302	US20080115155 20080505; US20080015638 20080117; US20070916148P 20070504; US20070885361P 20070117	MIP, LLC [US]	H01M8/04; C10J3/00	A photobioreactor includes a cultivation zone configured to contain a liquid culture medium and facilitate growth of a microalgae biomass, a plurality of parallel edge-lit light transmitting devices mounted within the cultivation zone, and a collection zone oriented in relation to the cultivation zone such that at least a portion of the liquid culture medium and microalgae from the cultivation zone may be periodically harvested. Methods for illuminating algae, for dissolving materials into an algae medium, for extracting oil from algae, and for producing biodiesel from algal oil are also provided.
BRPI0515924	US20040955401 20040930; WO2005US07462 20050308	NALCO CO [US]	C09K3/18	"Produto para controle de poeira e controle do congelamento, e, métodos para prevenir a aglomeração de material particulado e a adesão do mesmo a superfícies em temperaturas de sub-congelamento, para prevenir a geração de poeira a partir de materiais particulados e para prevenir ac·mulo de gelo em uma superfície". Descreve-se e reivindica-se um produto para o controle de poeira e controle do congelamento, sendo que o produto compreende uma mistura de cerca de 45 a cerca de 90 por cento em peso de glicerina, de cerca de 5 a cerca de 50 por cento em peso de água e de cerca de 2 a cerca de 15 por cento em peso de um sal solúvel em água. O produto pode ser diluído com cerca de 10 a cerca de 400 por cento em peso de água para uso, baseado na quantidade do produto presente. O ponto de congelamento do produto pode ser, por exemplo, de cerca de -35<198>C. O produto pode ser sintetizado usando-se químicos comercialmente obteníveis, ou ele pode ser derivado de óleos vegetais, ou ele pode ser um subproduto de um processo de fabricação de biodiesel a partir da formação de ésteres de ácido graxo de óleos vegetais.

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US2008190160	US20070673747 20070212	NALCO COMPANY [US]	C05F7/00	A coating oil composition and methods of using the composition for dust control is provided. The coating oil comprises utilizing a by-product from the manufacture of biodiesel and/or fatty alkyl esters, wherein the by-product comprises C6-C24 saturated and unsaturated fatty acids, C6-C24 saturated and unsaturated fatty acid salts, methyl esters, ethyl esters and combinations thereof.
JP2008260819	JP20070103554 20070411	NAT INST OF ADV IND & TECHNOL [JP]	C10L1/02; C11C3/10	PROBLEM TO BE SOLVED: To remove a free fatty acid in a raw material oil to increase the yield of a fatty acid alkyl ester , in the method for producing the fatty acid alkyl ester by a transesterification reaction of the raw material oil in the presence of a lower alkyl alcohol and an alkali catalyst. - SOLUTION: The fatty acid alkyl ester and, in its turn, a bio -diesel fuel, are produced in a good yield by adding an acid and an alkyl alcohol to the raw material oil, extracting free fatty acids into an alkyl alcohol layer to remove it and subsequently subjecting an oily layer formed by the addition to an esterification reaction. Examples of the acid include an inorganic acid such as sulfuric acid, hydrochloric acid, nitric acid, acetic acid, formic acid, phosphoric acid and the like can be exemplified. Examples of the alcohol include a 1-6C alcohol such as methanol, ethanol, propanol, isopropanol, butanol, pentanol, hexanol and the like can be exemplified. - COPYRIGHT: (C)2009,JPO&INPIT
WO2008105518	JP20070050506 20070228; JP20070176710 20070704	NAT INST OF ADVANCED IND SCIEN [JP]; YOSHIMURA YUJI [JP]; TOBA MAKOTO [JP]; ABE YOKO [JP]; SUEMANOTHAM AMORNRAT [TH]; JENVANITPANJAKUL PEESAMAI [TH]	C10L1/02; B01J23/755; B01J29/12; C10L1/08; C10L1/19	[PROBLEMS] To provide a biodiesel fuel having excellent oxidation stability, and to provide a novel technique for producing a mixture of biodiesel fuel having excellent oxidation stability and a light oil. [MEANS FOR SOLVING PROBLEMS] An fatty acid alkyl ester (1) prepared from a transesterified oil-and-fat and/or a transesterified waste cooking oil and/or a fatty acid alkyl ester (2) prepared by esterifying a fatty acid are hydrogenated in the presence of a hydrogenation catalyst comprising at least one element selected from rare earth elements and at least one noble metal selected from noble metals belonging to Group VIII on the periodictable in a hydrogen atmosphere under a low pressure. A light oil may be added to the fatty acid alkyl ester (1) and/or the fatty acid alkyl ester (2).
JP2008266418	JP20070109600	NIPPON CATALYTIC	C11C3/10	PROBLEM TO BE SOLVED: To provide a method for producing

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	20070418	CHEM IND [JP]		a high-purity fatty acid alkyl ester and glycerin effective for uses of fuel, food, cosmetic, medicine, etc., which reduces load of utility and is energetically advantageous without losing a fatty acid ester and glycerin in the production of a fatty acid alkyl ester and/or glycerin. - SOLUTION: The method for producing a fatty acid alkyl ester and/or glycerin by reacting oils and fats with an alcohol in the presence of a catalyst comprises a process for recovering an unreacted alcohol, introducing the water-containing alcohol to a membrane separation apparatus and separating the alcohol from water by the membrane separation apparatus and a process for transporting the separated alcohol to a reaction raw material. - COPYRIGHT: (C)2009,JPO&INPIT
JP2008260870	JP20070105341 20070412	NIPPON CATALYTIC CHEM IND [JP]; RES INST INNOVATIVE TECH EARTH [JP]	C11C3/10; B01J23/34; C07C27/02; C07C31/22; C07C67/03; C07C67/58; C07C69/24; C07C69/58; C10L1/02	PROBLEM TO BE SOLVED: To provide a manufacturing method for a fatty acid alkyl ester and/or glycerine suppressing reduction of activity of a solid catalyst used in an ester-exchange reaction of fats and oils with alcohols. - SOLUTION: The method for producing the fatty acid alkyl ester and/or glycerine includes the dissolved oxygen concentration reduction step for reducing the dissolved oxygen concentration of the fats and oils and/or the alcohols before the reaction step for reacting the fats and oils with the alcohols in the presence of the solid catalyst. - COPYRIGHT: (C)2009,JPO&INPIT
WO2008133189	JP20070110851 20070419; JP20070234773 20070910	NIPPON CATALYTIC CHEM IND [JP]; RES INST INNOVATIVE TECH EARTH [JP]; AKATSUKA TAKEO [JP]; NONOGUCHI MASANORI [JP]; OKU TOMOHARU [JP]	C11C3/10; B01J23/34	It is intended to provide a method for efficiently producing a fatty acid alkyl ester and/or glycerol suitable for use in food, fuel or the like, which enables simplification or elimination of a complicated step such as a catalyst recovery step, using a catalyst which does not cause elution of an active metal component even if the catalyst is repeatedly used, can maintain an excellent catalytic activity for a long period of time even in the presence of water, can exhibit a high activity to both reactions, transesterification of glycerides contained in an oil and fat and esterification of free fatty acids, and can show a high catalytic activity even in the presence of impurities such as free fatty acids (FFA) contained in the oil and fat in the production of the fatty acid alkyl ester and/or glycerol by reacting the oil and fat with an alcohol; and the catalyst. The method for producing a fatty acid alkyl ester and/or

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				glycerol, comprising the step of bringing an oil and fat into contact with an alcohol in the presence of a catalyst, wherein the catalyst has a manganese compound and a tetravalent metal element and/or a tetravalent semi-metal element compound(s).
JP2008239875	JP20070084548 20070328	NIPPON OIL CORP [JP]	C10L1/08; B01J23/88; C10G3/00; C10L1/00; C10L1/188; C10L1/19; C11C3/10; C11C3/12	PROBLEM TO BE SOLVED: To obtain a gas oil composition that comprises a low environmental load type gas oil base produced from triglyceride-containing hydrocarbons being animal and vegetable oils and fats and animal and vegetable oil and fat-derived components as raw materials and has excellent life cycle CO<SB>2</SB>discharge characteristics and lubrication properties. - SOLUTION: The gas oil composition is obtained by bringing a treated oil prepared by mixing animal and vegetable oils and fats and/or an animal and vegetable oil and fat-derived components with a sulfur-containing hydrocarbon compound so as to have a sulfur content of 1 mass ppm-2 mass% into contact with a porous inorganic oxide containing two or more kinds of elements selected from aluminum, silicon, zirconium, boron, titanium and magnesium and a catalyst containing one or more kinds of metals selected from elements of the group 6A and the group 8 supported on the porous inorganic oxide in the presence of hydrogen under a hydrogen pressure of 2-13 MPa, at a liquid space velocity of 0.1-3.0 h<SP>-1</SP>, at a hydrogen oil ratio of 150-1,500 NL/L at a reaction temperature of 150-480[deg.]C to produce a fraction and adding 50-300 mass ppm of lubricity improver (LI) and has a 95% distillation temperature of <=360[deg.]C, a sulfur content of <=10 mass ppm, an oxygen content of <=1 mass%, a fatty acid alkyl ester content of <=3.5 mass%, an acid value of <=0.13 mgKOH/g, a methanol content of <=0.01 mass%, a glyceride content of <=0.01 mass% and a wear scar diameter (WS 1.4) by HFRR of <=460 [mu]m. - COPYRIGHT: (C)2009,JPO&INPIT
JP2008239876	JP20070084549 20070328	NIPPON OIL CORP [JP]	C10L1/08; C10G3/00	PROBLEM TO BE SOLVED: To obtain a gas oil composition that comprises a low environmental load type gas oil base produced from triglyceride-containing hydrocarbons being animal and vegetable oils and fats and animal and vegetable oil and fat-derived components as raw materials and has excellent life cycle

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				CO<SB>2</SB>discharge characteristics and lubrication properties. - SOLUTION: The gas oil composition is obtained by mixing a low environmental load type gas oil base produced from triglyceride-containing hydrocarbons being animal and vegetable oils and fats and/or animal and vegetable oil and fat-derived components as a raw material with a petroleum-based hydrogenated oil containing a gas oil fraction purified from a crude oil etc., to give a fraction and mixing the fraction with a petroleum-based hydrogenated oil having a kerosene fraction purified from a crude oil etc., and has a 95% distillation temperature of <=360[deg.]C, a sulfur content of <=10 mass ppm, an oxygen content of <=1 mass%, a fatty acid alkyl ester content of <=3.5 mass%, an acid value of <=0.13 mgKOH/g, a methanol content of <=0.01 mass%, a glyceride content of <=0.01 mass% and a cloud filter plugging point of <=-5[deg.]C. - COPYRIGHT: (C)2009,JPO&INPIT
WO2008117856	JP20070084548 20070328; JP20070084549 20070328	NIPPON OIL CORP [JP]; KOYAMA AKIRA [JP]; KANEKO TAKASHI [JP]; IGUCHI YASUTOSHI [JP]; IKI HIDESHI [JP]	C10L1/08; B01J23/88; C10G3/00; C10L1/188; C10L1/19; C11C3/10; C11C3/12	As a gas oil composition which results from an animal or vegetable fat or oil and which is excellent in life-cycle CO2 emission characteristics and lubrication performance, a gas oil composition specified in T95, sulfur content, oxygen content, fatty acid alkyl ester content, total acid number, glyceride content, and so on is provided, which composition is obtained by adding 50 to 300ppm by mass of a lubricity improver to a fraction produced by bringing an oil to be treated which oil is obtained by mixing an animal or vegetable fat or oil and/or a component resulting from an animal or vegetable fat or oil with a sulfur-containing hydrocarbon in such an amount at to give a sulfur content of 1ppm by mass to 2% by mass into contact with a catalyst consisting of a porous inorganic oxide and a group 6A metal and/or a Group 8 metal which are supported on the oxide under prescribed hydrogen conditions.
EP1948760	WO2006KR04828 20061116; KR20050110551 20051118	NOH MIN JEONG [KR]	C10G3/00	A method for producing biodiesel using supercritical alcohols
CN101255346	US20060504828	NOVA BIOSOURCE	C10G3/00;	A system and method for the conversion of free fatty acids to

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	20060815	TECHNOLOGIES LL [US]	C11C3/10	glycerides and the subsequent conversion of glycerides to glycerin and biodiesel includes the transesterification of a glyceride stream with an alcohol. The fatty acid alkyl esters are separated from the glycerin to produce a first liquid phase containing a fatty acid alkyl ester rich (concentrated) stream and a second liquid phase containing a glycerin rich (concentrated) stream. The fatty acid alkyl ester rich stream is then subjected to distillation, preferably reactive distillation, wherein the stream undergoes both physical separation and chemical reaction. The fatty acid alkyl ester rich stream is then purified to produce a purified biodiesel product and a glyceride rich residue stream. Biodiesel may be further recovered from the glyceride rich residue stream, by further separation .. of and/or processing of glycerides/free fatty acids contained therein. The glycerin rich second liquid phase stream may further be purified to produce a purified glycerin product and a (second) wet alcohol stream. Neutralization of the alkaline stream, formed during the alkali-catalyzed transesterification process, may proceed by the addition of a mineral or an organic acid.
WO2008125574	EP20070105944 20070411; US20070913325P 20070423	NOVOZYMES AS [DK]; DESMET BALLESTRA GROUP S A NV [BE]; DE GREYT WIM [BE]; KELLENS MARC [BE]; HOLM HANS CHRISTIAN [DK]; CHRISTENSEN MORTEN WUERTZ [DK]; NIELSEN PER MUNK [DK]	C12P7/64	The invention relates to the utilisation of fatty materials with substantial free fatty acid content in the production of biodiesel by the use of microbial enzymes that are effective in a solvent-free process for the production of esters of fatty acids and C1-C3 alkyl alcohols.
EP1951847	WO2006US60920 20061115; US20050739805P 20051123	NOVUS INT INC [US]	C10L1/18; C10L5/00	Biodiesel fuel compositions having increased oxidative stability
JP2008163134	JP20060352790	NPO CHIKYU	C10L1/00;	PROBLEM TO BE SOLVED: To provide a preparation method of

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	20061227	KANKYO YUGO CT; HUMAN SUPPORT KK	C12M1/02; C12M1/42; C12N1/00; C12N13/00	an alternative fuel contributing to obtainment of a high quality biodiesel fuel in a simple process without use of a chemical. - SOLUTION: The preparation method of an alternative fuel for obtaining a biodiesel fuel 4 by processing a biodiesel fuel material 1 such as a waste oil and a vegetable oil with a reaction device 3 comprises a step of providing an electric field to the biodiesel fuel material while agitating the same as a preprocess 2 by the reaction device 3. - COPYRIGHT: (C)2008,JPO&INPIT
JP2008274030	JP20070116415 20070426	OITA UNIV [JP]	C10L1/02; B01J21/10; B01J23/04; B01J23/10; B01J27/18; B01J27/232; B01J29/18; B01J29/65; C11C3/10	PROBLEM TO BE SOLVED: To provide a method for producing a biodiesel fuel by which a catalyst can easily be separated and recycled after use by using a solid catalyst in a step for forming a fatty acid ester by subjecting a stock oil and a lower alcohol to an ester-exchange reaction by using the solid alkali catalyst, the high-purity fatty acid ester can be produced in good yield without forming glycerol and a glycerol derivative containing alkali or reacted with the alkali as by-products, and a high-purity glycerol can be obtained to enable the effective utilization thereof and to reduce the total production cost. - SOLUTION: The method for producing the biodiesel fuel by subjecting the stock oil to the ester exchange reaction with the lower alcohol by using the solid alkali catalyst includes a step for easily separating the catalyst, the product and the glycerol by using the solid alkali catalyst. - COPYRIGHT: (C)2009,JPO&INPIT
US2008312468	US20070811711 20070612	ORBITEK, INC.[US]	C07C69/66	A method for making fatty acid esters by reacting triglycerides with an excess of alcohol in a pressurized environment, where the unreacted alcohol component is separated from the reaction product by a flash purification techniques. In this manner, the pressure of the product stream is significantly reduced to vaporize unreacted alcohol, which is then condensed for later reuse. The invention provides a cost-effective and convenient mechanism to simultaneously recycle excess alcohol and to purify ester product and/or glycerol product streams.
KR20080089509	US20060341294 20060127	ORYXE ENERGY INTERNATIONAL INC [US]	C10L1/12; C10L1/18; C10L10/04; C10L10/08	Biodiesel fuel additive

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WO2008134836	BR2007PI06170 20070502	OURO FINO PARTICIPACOES E EMPR [BR]; NETO DOLIVAR CORAUCCI [BR]	C10L1/02	The present invention refers to a process to produce biodiesel and/or fuel oil from microbial oilseed and/or algal biomass and/or from sugar cane residues and derivatives. The products according to the present invention are appropriate for direct use in motors and to generate energy or steam. The integrated process of the present invention comprises the use, as raw materials, of microbial oil-producing biomass obtained from sugar cane residues and derivatives, which is integrated with algal biomass and/or glycerol and are processed by steps of production of oil-producing microbial biomass from filamentous fungi and/or yeasts, steps of simultaneous production of algal biomass by fully using residues, CO2 and residual broth of said production of microbial biomass, as well as steps of extraction and transesterification of lipids contained in the biomass, with reuse of the residual glycerol thus produced. The process as disclosed deals with innovative and ecologically sustainable technology, not generating any kind of residue, also providing for the advantage of releasing considerable volumes of oxygen into the atmosphere.
EP2007859	WO2007EP51110 20070206; DE200610017105 20060410	OXIRIS CHEMICALS S A [ES]	C10L1/223; C10L10/00	Method of increasing the oxidation stability of biodiesel
WO2008080113	US20060871694P 20061222; US20060871690P 20061222	PARADIGM SENSORS LLC [US]; KOEHLER CHARLES [US]; SEITZ MARTIN [US]; WOOTON DAVID [US]; HIRTHE RICHARD [US]	G01N21/66; G01N33/22	The present invention relates to methods and systems or apparatuses for analyzing fluids. More particularly the present invention relates to apparatuses and methods that employ impedance spectroscopy (IS) for analyzing fuels. Fuels of interest include biofuel, particularly biodiesel . Hand-held and "in-line" IS apparatuses are disclosed.
WO2009003109	US20070946253P 20070626	PENN STATE RES FOUND [US]; KROPF MATTHEW M [US]	B01J19/10	The invention relates generally to chemical reactions and processes, and in particular to a method for enhancing the rate of a chemical reaction and to apparatus for carrying out the method. The invention more particularly relates to methods and apparatus which utilize microwave and ultrasonic energy to enhance chemical reaction rates; and in specific instances, the invention

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				relates to methods, processes and apparatus for the synthesis of biodiesel fuels. The methods, processes and apparatus of the invention are useful for the synthesis of biodiesel fuels; and also useful for production of reaction products of esterification and/or transesterification reactions including fatty acid alkyl esters.
US2008295397	US20080131191 20080602; US20070940986P 20070531	PENRAY COMPANIES INC [US]	C10L1/188	A diesel fuel additive for use in association with bio -diesel fuel and/or petroleum derived diesel fuel having one or more solvent(s) and one or more pour-point depressant(s), wherein the pour-point depressant(s) include a polyglycerol ester, such as polyglycerol polyricinoleate and/or polyglycerol esters of mixed fatty acids. Augmentive agents may include ethylene vinyl acetate and/or polyethylene vinyl acetate.
CA2635521	BR2007PI02541 20070621	PETROLEO BRASILEIRO SA [BR]	C10G3/00; C10G11/05; C11B3/02; C11C3/00	The present invention comprises a thermocatalytic cracking process for the production of diesel oil from a charge of vegetable origin made from seeds of oleaginous plants in refineries possessing at least two FCC reactors. At least one of such reactors processes heavy gas oil or residue under conventional conditions whilst at least one of such reactors processes the charge of vegetable origin made from seeds of oleaginous plants under conditions suitable for production of diesel oil. Said process employs the same catalyst utilised in the fluid catalytic cracking process which, simultaneously, processes a conventional charge. The diesel, or biodiesel , oil produced by means of said process is of superior quality having a cetane number exceeding 40 given that the cracking reactions occur at low temperatures and the products obtained are less oxidised and consequently purer than products obtained by means of existing technology. <SDOCL LA=EN> -15- Claims 1. CATALYTIC CRACKING PROCEss FOR PRODUCTION OF DIESEL FROM SEEDS OF OLEAGINOUS PLANTS characterised by being conducted in a fluid catalytic cracking (FCC) unit possessing at least two FCC reactors, of the riser ascending-flow type or of the downflow descending-flow type, wherein at least one of such FCC reactors operates under conventional conditions appropriate for processing a charge of heavy gas oil or residue (A) at temperatures exceeding 490 .degree.C, whilst at least one of the remaining FCC reactors

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				operates in the processing of a charge of vegetable origin (B) made from seeds of oleaginous plants at temperatures below 490 .degree.C. 2. CATALYTIC CRACKING PROCEss FOR PRODUCTION OF DIESEL FROM SEEDS OF OLEAGINOUS PLANTS according to claim 1 characterised by comprising the stages of: a) atomising preheated charges (A, B); b) introducing said charge of gas oil (A) into a first FCC reactor (1) operating under normal reaction conditions and at temperatures exceeding 490 .degree.C; and c) introducing said charge of vegetable origin (B) made from seeds of oleaginous plants into at least one of the remaining FCC reactors (2) operating at reaction temperatures in the band from 250 .degree.C to 490 .degree.C; d) obtaining a biodiesel having a high cetane number -16- 3. CATALYTIC CRACKING PROCEss FOR PRODUCTION OF DIESEL FROM SEEDS OF OLEAGINOUS PLANTS according to claim 1 characterised by said charge of vegetable origin (B) being constituted by seeds of oleaginous plants selected from the group consisting of castor beans, soya, cotton, peanut, rape, jatropha, sunflower or any other seed of a suitable oleaginous plant. 4. CATALYTIC CRACKING PROCEss FOR PRODUCTION OF DIESEL FROM SEEDS OF OLEAGINOUS PLANTS according to claim 3 characterised by said charge of vegetable origin (B) being constituted by seeds of oleaginous plants utilised pure or in admixture with different seeds in any proportion thereof. 5. CATALYTIC CRACKING PROCEss FOR PRODUCTION OF DIESEL FROM SEEDS OF OLEAGINOUS PLANTS according to claim 2 characterised by said charge of vegetable origin (B) being previously crushed with a fluid, preferably water, then being introduced into said FCC reactor (2) operating at reaction temperatures in the band from 250 .degree.C to 490 .degree.C. 6. CATALYTIC CRACKING PROCEss FOR PRODUCTION OF DIESEL FROM SEEDS OF OLEAGINOUS PLANTS according to claim 1 characterised by favouring the production of diesel oil having a high cetane number in fluid catalytic cracking units. 7. CATALYTIC CRACKING PROCEss FOR PRODUCTION OF DIESEL FROM SEEDS OF OLEAGINOUS PLANTS according to claim 6 characterised by the cetane number of said diesel oil

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				exceeding 40. -17- 8. CATALYTIC CRACKING PROCEss FOR PRODUCTION OF DIESEL FROM SEEDS OF OLEAGINOUS PLANTS according to claim 1 characterised by said catalyst containing 10 % - 60 weight % of solid acid, 0 % - 50 weight % of alumina, 0 %- 40 weight % of silica, the remainder being kaolin. 9. CATALYTIC CRACKING PROCEss FOR PRODUCTION OF DIESEL FROM SEEDS OF OLEAGINOUS PLANTS according to claim 8 characterised by said solid acid being a zeolite of the ZSM type, a zeolite of the faujasite type, mike silico-aluminium phosphate (SAPO), aluminium phosphate (ALPO), and any such combinations. 10. CATALYTIC CRACKING PROCEss FOR PRODUCTION OF DIESEL FROM SEEDS OF OLEAGINOUS PLANTS according to claim 1 characterised by said diesel oil produced being biodiesel oil having a cetane number exceeding 40.</SDOCL>
EP1939393	BR2006PI05371 20061222	PETROLEO BRASILEIRO SA [BR]	E21B43/16	The present invention refers to the use of solvents such as light liquid fractions of petroleum, for example diesel oil and gas oil, a light petroleum, and the essential oils derived from renewable sources such as for example biodiesel , used pure or mutually admixed in any proportion, for injection into a geological formation through an injection well, there resulting a final mixture (petroleum/injected solvent) presenting much lower viscosity and much greater fluidity than the original petroleum, having an impact throughout the petroleum production chain. The present patent presents real gains in all phases of the production chain.
CA2621989	BR2007PI01993 20070330	PETROLEO BRASILEIRO SA [BR]	C10G3/00; C07C29/60; C07C29/74; C07C67/02	A method to exploit the glycerin obtained as a by-product of the industrial process to produce biodiesel inside or out of the industrial production unit, providing a reduction in the environmental liability that m ay be caused by an excess in the production of glycerin that cannot be exploited f or industrial use. The referenced method uses recycling of the glycerin obtaine d through industrial process to produce biodiesel , using a process basically consisting of four stages: a) Captation of the glycerin produced as a by--product of the industrial process for producing biodiesel ; b) hydrogenation of said n-propanol glycerin, c) recycling of the n-propanol thus obtained to be added to a

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				mixture of alcohols; and d) transesterfication of the n-propanol mixture added to the alcohol mixture, together with raw material triglycerid es from renewable resources in order to obtain biodiesel . The referenced recycling of the n-propanol stream provides a reduction in the amount of the alcohol mixture necessary for the industrial process to produce biodiesel , consequently reducing operational costs. <SDOCL LA=EN> CLAIMS 1. Method for recycling and exploitation of the glycerin obtained in the production of biodiesel , characterized by including the following stages: a) captation of the glycerin produced as a by-product of the industrial process for producing biodiesel ; b) hydrogenation of the glycerin through a stream rich in n-propanol; c) recycling of the n-propanol stream thus obtained to be added to an alcohol stream (methanol or ethanol); and d) transesterfication of the n-propanol stream added to the alcohol stream, together with raw material triglycerides from renewable resources in order to obtain biodiesel . 2. Method for recycling and exploitation of the glycerin obtained in the production of biodiesel , in accordance with Claim 1, characterized by the referenced alcohol stream to include a mixture of methanol and ethanol, and its composition in a combination that includes any reciprocal proportion, ranging from 0 to 100% between them. 3. Method for recycling and exploitation of the glycerin obtained in the production of biodiesel , in accordance with Claim 1, characterized by the referenced triglyceride raw material from renewable resources to be made up of a compound of triglycerides of vegetable and animal origin in a combinati on that includes any reciprocal proportion, ranging from 0 to 100% between them. 4. Method for recycling and exploitation of the glycerin obtained in the production of biodiesel , in accordance with Claim 3, characterized by the referenced triglyceride raw material of vegetable origin to be made up of a composition of vegetable oils in general in a combination that includes any reciprocal proportion, ranging from 0 to 100% between them. 13 5. Method for recycling and exploitation of the glycerin obtained in the production of biodiesel , in accordance with Claim 3, characterized by the triglyceride raw material of animal origin in a

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				combination of fat from beef , goat, sheep, bird origin in a combination that includes any reciprocal proportion, ranging from 0 to 100% between them. 6. Method for recycling and exploitation of the glycerin obtained in the production of biodiesel , in accordance with Claim 1, characterized by the stages of the referenced method using the same equipment used for the industrial process to produce biodiesel and to be performed under the same operational conditions as the industrial process to produce biodiesel . 7. Method for recycling and exploitation of the glycerin obtained in the production of biodiesel , in accordance with Claim 1, characterized by the referenced captation of glycerin produced as a by-product of theindustrial process to produce biodiesel to include the use of the raw glycerin fraction for hydrogenation of the glycerin in a stream rich in n-propanol. 8. Method for recycling and exploitation of the glycerin obtained in the production of biodiesel , in accordance with Claim 1, characterized by the referenced recycling of the n-propanol stream to substitute part of the referenced alcohol stream providing a reduction in the amount of alcohol mixture necessary for the industrial process to produce biodiesel . 9. Method for recycling and exploitation of the glycerin obtained in the production of biodiesel , in accordance with Claim 8, characterized by the referenced reduction in the amount of alcohol mixture necessary for the industrial process to produce biodiesel to be in excess of 25%. 14</SDOCL>
US2008295393	BR2007PI02373 20070530	PETROLEO BRASILEIRO SA [BR]	C10L1/18; B01J21/18; B01J27/16; B01J27/186; C01G33/00	The invention relates to the field of methods used for the transesterification of oils and fats in order to produce diesel oil. The invention provides a novel method for the production of diesel oil by transesterifying fatty acid esters present in vegetable oils and fats, using a novel catalyst consisting of the oxide of a group V metal and having the formula X2O5, such as niobium pentoxide (Nb2O5). Unlike in the methods used traditionally according to the prior art, the oils are converted here into high-purity products, including glycerol, in yields of the order of 100%, while using significantly less catalyst for a quantity of oil processed, when e.g. soya-bean oil, cotton-seed oil and canola oil are processed by the method according to the invention.

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WO2008104929	ZA20070001663 20070226; US20070891590P 20070226	PETROLEUM OIL AND GAS CORP OF [ZA]; KNOTTENBELT CYRIL DAVID [ZA]; STANDER JOHAN [ZA]; MOTSEKOA LEHLOHONOLO AUBREY [NL]; THOMAS MAXWELL PAUL [ZA]	C10L1/02; C10L1/18	This invention relates to alternative diesel fuels with improved cold flow properties. The alternative fuel may be a biodiesel which typically comprises fatty acid methyl or ethyi esters; or a diesel fuel blend including diesel fuel derived from a Fischer-Tropsch (FT) reaction and possibly comprising or containing crude-derived diesel fuel and biodiesel . The cold flow properties are improved by adding a higher alcohol component which is not a naturally occurring component of the biodiesel , nor the diesel fuel.
BRPI0702083	BR2007PI02083 20070328	PETTERLE FELIPE RODRIGUES [BR]	A23K1/06; A23K1/14	Processo de fabricação de ração e concentrados, particularmente compreendendo a incorporação dos "farelos" ao resultado da vinhaça desidratada como matéria-prima básica, sendo a vinhaþa oriunda do processo de fabricação de álcool, os farelos provenientes da fabricação do biodiesel e/ou extração de óleos, com incorporação de uréia, sal e outros micronutrientes. A vinhaça já tratada e preparada, os farelos e a incorporação de outros nutrientes são conduzidos ao misturador (es), senda sua mistura balanceada de acordo com a fonte de matéria-prima para obtenção do álcool, que pode vir da sacarose a partir da cana-de-aþ·car, da beterraba e outras fontes de sacarose; do amido proveniente do arroz, milho, batata-doce, batata-inglesa, mandioca, sorgo, trigo e outras fontes de amido; e da celulose. Por outro lado, a fonte de matéria-prima para a extração do biodiesel pode ser qualquer tipo de semente ou grão oleaginoso, por exemplo, soja, girassol, canola, colza, arroz, milho, trigo, sorgo, algodão, amendoim, mamona etc., e também de outras fontes como pinhão manso, nabo forrageiro, palmeiras etc. A raÇÃo proveniente da mistura dessas duas rotas de produÇÃo serve para alimentação de bovinos, equinos, ovinos, caprinos, suínos, aves e outros animais. O tipo de matéria-prima utilizada para a produção de álcool e na extraÇÃo do óleo tem características físico-químicas e nutricionais diferentes, sendo imperativo a proporcionalidade da composiÇÃo desta mistura e o balanceamento da incorporaÇÃo de outros nutrientes para, em quantidades proporþ§es adequadas, atender às exigências orgânicas e obtenÇÃo de melhores taxas de ganhos de peso e

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				otimização dos caracteres de digestibilidade animal.
WO2008110876	IT2007RM00129 20070314	PLANTECHNO S R L [IT]; FOGHER CORRADO [IT]	C12N15/82; A01H1/06	The present invention relates to the development of tobacco plants, modified through mutagenesis techniques, interspecific hybridisation followed by poliploidisation and recombinant DNA technologies, characterised by the fact of being capable of producing a very high amount of seeds and their use for the production of oil for energetic and industrial scopes, such as combustion oil, biodiesel and lubricating oil, and for animal and human alimentation.
GB2445608	GB20070000297 20070109	POTTER STEVEN [GB]	G01N33/28; G01M15/00	A standard diesel engine is used as a reference and tests for emissions, power and fuel consumption are carried out firstly on petro-diesel then on biodiesel . Before each test, filters are checked or replaced and fuel lines drained. A further test with only the biodiesel fuel is carried out about one month later. The testing is intended to provide both quantitative and qualitative assurances and proof to the customer that the biodiesel fuel is more beneficial to their diesel engine and the environment than standard petrol-diesel would be.
US2008202021	US20070677896 20070222	POWELL SCOTT W [US]	C10L1/18	The invention provides methods of synthesizing and purifying methyl esters and specifically biodiesel fuels. The methods include acid-catalyzed transesterification of a triglyceride source followed by formation of an acidic emulsion that is subjected to an electric field to break the emulsion and recover the purified methyl esters. After recovery, the purified methyl esters may be used as a highly purified and stable biodiesel fuel without further treatment. The electric field may be efficiently applied to the acidic emulsion in an electrochemical reactor such as an electrocoagulation chamber.
BRPI0700184	BR2007PI00184 20070111	PREHN CRISTIANE MARIA DOS SANT [BR]	C10L1/02; B01J19/26; G05B19/05	Sistema fechado de pêndulo para produção de biodiesel . A presente invenção, que através de um elemento principal produz o Biodiesel , compreende um sistema de ciclo fechado e controlado por sensoramento programado no CLP e proporciona menor custo final de produto acabado. O processo ocorre dentro do reator quando o catalisador é introduzido através de pressão de 2,5 bar, por intermédio de bombas injetoras de quatro pontos (P3), (P4), (P5), (P6), injetores de ssgua (P1) e (P2) trabalhando

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				em conjunto com misturadores mecânico automático (M1) e (M2).
WO2008144448	US20070930704P 20070518; US20080023816P 20080125	PRIMAFUEL INC [US]; HULTEBERG CHRISTIAN [SE]; BRANDIN JAN [SE]; WOODS RICHARD ROOT [US]; PORTER BROOK [US]	C07C27/00	A method of producing short chain alcohols from glycerol generated as a byproduct of biodiesel production is provided.
WO2008100798	US20070900645P 20070209	PRIMAFUEL INC [US]; WOODS RICHARD ROOT [US]; PORTER BROOK [US]	C11B3/00	Methods and apparatus for the production of biodiesel are provided. The methods involve converting a fatty acid rich material to biodiesel using a homogeneous catalyst, followed by electrodialysis of the resulting product to remove the catalyst.
CN101230541	CN20071195715 20071213	QUARTERMASTER EQUIPMENT RES IN [CN]	D06M15/643; D06M13/00; D06M15/53	The invention provides a soft hemp oil agent. The soft hemp oil agent has the components as follows: biodiesel of 2 to 20 percent, moisture absorption humectant of 0.5 to 3 percent, emulsifier of 1 to 10 percent, and water which is the rest. The soft hemp oil agent is prepared according to the steps as follows: the biodiesel and the emulsifier are added to a reaction kettle for stirring according to the proportion first; the water is gradually added after the solution is well-proportioned; the stirring is continued still the solution disperses evenly; then the moisture absorption humectant is added; the water is added to a set quatity after being stirred. The soft hemp oil agent provided by the invention is used for immersing flexible hemp after the degumming of hemp stem-fibre, oil mechanical injection soft hemp before health preserving, or soft hemp health preserving before opening. Bastose processed by adopting the soft hemp oil agent provided by the invention has the smooth, soft, and hygroscopic as well as moist effect, the penetration process is accelerated at the same time, the cost is lowered, and the invention is beneficial for environmental protection.
WO2008120223	IN2007MU00654 20070330	RELIANCE LIFE SCIENCES PVT LTD [IN]	C11B1/04; C07C31/22; C11B1/10; C11B3/12;	The disclosure provides methods and systems for the production of biodiesel from biological feedstocks such as vegetable oils or animal fats. In particular, the disclosure is directed to the product of biodiesel from seeds such as non-edible oil seeds. Methods for

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			C11B13/00; C11C3/08	maximizing oil recovery from the feedstocks are provided, as well as methods to convert free fatty acids in the feedstocks into glycerides amenable to transesterification. Thus the methods and systems provide for efficient biodiesel production.
BRPI0705912	US20060764440P 20060202	RENEWABLE ENERGY GROUP [US]; CROWN IRON WORKS CO [US]	B01D37/00; C10L1/02	Processo de filtração a frio de biodiesel . Um processo de produção de biodiesel melhorada inclui as etapas de processar uma carga de alimentação para produzir biodiesel , resfriar o biodiesel a fim de formar sedimento, e filtrar o biodiesel para remover o sedimento. O biodiesel resultante do processo de filtração a frio evita problemas de formação de sedimento durante o armazenamento e transporte.
EP1995302	WO2007JP00032 20070126; JP20060021774 20060131	REVO INTERNAT INC [JP]; EHIME UNIVERSITY [JP]; EHIME PREFECTURAL GOVERNMENT [JP]; KOSHIKAWA TETSUYA [JP]	C11C3/10; B01J23/02; B01J37/00; B01J37/02; C10L1/02	An object of the present invention is to provide a method for producing an alkyl ester of a fatty acid from a fat or oil, of which main component is a triglyceride, and an alkyl alcohol under mild conditions in a high reaction efficiency, and the alkyl ester of a fatty acid can be effectively utilized as a diesel fuel oil, an industrial raw material or the like, the method further being capable of utilizing on an industrial scale, in which post-treatment steps for removing a catalyst component can be simplified or omitted. For this purpose, the method for producing an alkyl ester of a fatty acid of this invention includes the step of carrying out a transesterification reaction between a fat or oil and an alcohol in the presence of a base catalyst containing calcium oxide, characterized in that the method includes the step of contacting the base catalyst with the alcohol, to carry out an activation treatment thereof in advance of the reaction.
US2008289247	GT20070043 20070525	RLO OESTE S A [GT]	C10L1/00	A novel method to prepare high-enthalpy biofuels has been developed based on a new chemical pattern which has never been used before in the synthesis of renewable fuels. These biofuels are based on natural oleaginous feedstock, rendering low viscosity liquids with broad liquid range and enthalpy levels much superior to those found in common biodiesel , meaning ethyl or methyl fatty esters. As in the case of biodiesel , these new biofuels contain zero sulfur, causing none of the major pollution associated with commercial diesel. High enthalpy biofuels are aliphatic nitrile compounds, containing a single

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				nitrogen substituent, are chemically aprotic, even though their high degree of polarity is reflected in its high cetane index and solubility parameter. The present invention includes fuels associated with diesel, as well as other high-enthalpy fractions, which according to their boiling point, correspond to naphtha in the lower scale, and bunker in the upper scale.
BRPI0703770	US20060858583P 20061113	ROHM & HAAS [US]	C07C67/03; C07C69/28; C07C69/527; C10L1/02	Método para esterificação de ácidos graxos livres em triglicerídeos com álcoois alifáticos C~ 1~-C~ 8~ ou dióis. Um método para esterificação de ácidos graxos livres em triglicerídeos, com álcoois alifáticos C~ 1~-C~ 8~. O método usa uma resina de troca de íon ácido como um catalisador. O catalisador Ú contatado com uma mistura de reação contendo um triglicerídeo tendo pelo menos 1% de ácidos graxos livres e um álcool alifático C~ 1~-C~ 8~ sob condições adequadas para esterificação.
CN101279891	EP20070290412 20070404	ROHM & HAAS [US]	C07C31/22; B01D15/36; C07C29/76	A method for purification of glycerol, especially crude glycerol from biodiesel production. The method uses gel-type acidic ion exchange resin beads to separate fatty acid salts and inorganic salts from the crude glycerol.
CN101284221	CN20081098944 20080518	RUILIN ZHU [CN]	B01J19/00	The invention relates to a strengthening technology of a reactor and a device thereof. The technology is used for enhancing the producing efficiency, the percent conversion, the component and the quality of the products (like the biodiesel); the technical problems of low efficiency, unsound effect, limited application range and unable continuous handling, etc. in the prior art are solved. The technical proposal comprises the following key points: an oscillatory device matched with the reactor is arranged on the reactor; the collision probability of the reaction material particles is enhanced by concussion to form onflow or full mix; the flowing boundary-layer is damaged and the materiel flowing state is improved, so that the flowing speed of each material particle is going symmetrical, the back mixing is avoided, and the plug flow is achieved; the movement which is beneficial to the processing of reaction technical-process is generated. The flowing state of the materiel, the staying time, composition and percent conversion of products can be adjusted and controlled by

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				adjusting and controlling the frequency and the amplitude of a plunger; or the materiel is led to reach the plug flow in the same way. The strengthening device has the advantages that the adjusting elasticity is strong and the adaptation range is wide; various reacting conditions can be met by adjusting the moving velocity, the geometrical shape, the dimension and the spatial location of a plunger driving mechanism or by changing the baffle patterns.
WO2008085715	US20060871413P 20061221	SAFEFRESH TECHNOLOGIES LLC [US]; GARWOOD ANTHONY J M [US]; GARWOOD NICHOLAS JAMES [US]	A23B4/03	A method and apparatus for separating lean meat and/or fat from lean meat-containing material, including combining a particulate material with fluid carbon dioxide. The material and fluid is introduced into a vessel and is separated into low density and high density fractions. The material from the low density fraction is removed via an outlet and has a higher percentage of fat than the material introduced into the vessel. The material from the high density fraction is removed via an outlet and has a higher percentage of lean meat than the material introduced into the vessel. The vessel can include a centrifuge bowl or an inclined vessel. Separation is achieved via gravity or the application of an artificial force field, such as centrifugal force, to separate particulates high in density from those low in density.
CN201125232Y	CN200721949900U 20071114	SHANDONG PEANUT RES INST [CN]	C10G7/00; C10G3/00	The utility model discloses a bio -diesel distillation column which includes a packed column. An air exhaust device is on the column top for forming vacuum, a reboiler and a feed preheater are on the column bottom. The bio -diesel distillation column has characteristics in that: pall ring is filled into packing section below a feed port in the packed column, metal perforated plate ripple regular packing is filled into packing section above the feed port. The bio -diesel distillation column can be used for refining crude bio -diesel to meet national bio -diesel standard requirement.
CN101225039	CN200810327572 0080117	SHANGHAI HUAYI ACRYLIC ACID CO [CN]	C07C57/055; C07C45/52; C07C51/235	The invention provides an acrylic acid preparing method with propanetriol as materials. The method is that: mixing vaporiform propanetriol solution with inert gases such as N_2, CO_2 and then coming into the first reactor which is filled with solid acid catalyst in which the propanetriol generates acrolein through catalytic dehydration. The acrolein is directly sent to the second reactor

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				which is filled with composite oxidates Mo12V2.2Cu2Sr1.5Ox catalyst, transforming the acrolein into acrylic through catalytic oxidation. The solid acid catalysts adopted are solid phosphoric acids, acid solid oxidates like Gamma-Al2O3, solid strong acid like MoO3SO4<2->, heteropolyacid and heteropolymolybdate, H-Y zeolite such as ZSM-18, MCM-56 or Co-Crystalline Zeolite of ZSM-5 and ZSM-11, or supported acid catalyst such as H3PO4/alumina. The acrylic acid preparing method uses propanetriol as materials, in particular to be able to use biodiesel byproduct propanetriol as materials. Acrylic acid can be generated through the two reaction procedures dehydration and oxidation. Compared with the two-step oxidation method for synthesizing acrylic acid of the petroleum propylene, the acrylic acid preparing method with propanetriol as materials has the advantages of cheap material and low production cost.
CN101240181	CN20071037356 20070209	SHANGHAI INST OF FOODSTUFF SCI [CN]	C10G3/00; C11B13/00	The invention discloses a technical method for preparing biodiesel by using wasted bleaching clay, adopting wasted bleaching clay extracting recycled oil technique in process of forming recycled oil. Fresh wasted bleaching clay and hexane are extracted according to proportion scale of weight percent from 1:1 to 1:3. Extraction time is from 1 to 3 hours. Grease recycled from the wasted has relatively sample components and prepared biodiesel is not only used as common fuel gas, but also diesel for vehicle; wastes become precise, which solves problem of environment-protection and adds approach to develop biodiesel , improving economic efficiency and having great social efficiency.
CN101265160	CN20081036908 20080430	SHANGHAI SANRUI POLYMER MATERI [CN]	C07C31/22; C07C29/76	The invention discloses a purification method of glycerin which is a byproduct of biodiesel . The purification method comprises the following steps: the glycerin that is the byproduct obtained during the biodiesel preparation process is evaporated to remove methanol by 70 percent to 80 percent in the glycerin; sulphuric acid solution or hydrochloric acid solution is added until the pH value thereof is adjusted to reach 5 to 6, wherein, the concentration of the sulphuric acid solution or the hydrochloric acid solution is 2 to 3 mol/l; mixed solution is performed through centrifugal separation, free fatty acid in upper solution and

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				residual solid catalyst in lower solution are removed, and glycerin phase in middle solution is collected; water is added in the glycerin phase for diluting; the diluted solution is dropped into an ion exchange column which contains macroporous acid resin and macroporous alkali resin at the same time with the flow speed of 2.0 to 3.0ml/min for exchanging, and effluent liquid is collected at the same time; the effluent liquid is decompressed and distilled to obtain the glycerin, the purity quotient of which is more than 97 percent. The technology is simple, the energy consumption is low, and the obtained glycerin has high purity quotient and good quality.
EP1992674	EP20070107741 20070508	SHELL INT RESEARCH [NL]	C10L1/02; C10L1/16; C10L10/14	A fuel composition comprising a gas oil base fuel, a fatty acid alkyl ester and one or more additional components, each of which components contains one or more aromatic constituents; and a method of reducing the phase separation temperature of a fuel composition comprising a gas oil base fuel and a fatty acid alkyl ester .
WO2008135602	EP20070107746 20070508; EP20070107741 20070508	SHELL INT RESEARCH [NL]; BREWER MARK LAWRENCE [GB]	C10L1/02; C10L1/16; C10L1/19; C10L10/14	A fuel composition comprising a gas oil base fuel and a fatty acid alkyl ester having less than 7% saturation; a fuel composition comprising a gas oil base fuel and a fatty acid alkyl ester having a Cloud Point of less than -5 DEG C; and a method of reducing the phase separation temperature of a fuel composition comprising a gas oil base fuel and a fatty acid alkyl ester .
US2008293956	CN20061022443 20061208	SICHUAN GUSHAN OIL CHEMICAL CO [CN]	C11C1/00	This invention involves a kind of fatty acid methyl ester (bio - diesel fuel), especially the method of obtaining ester-like substances by means of chemical alterations of oil.
WO2008143593	ID20070000247 20070524	SIE HENDERY HENDERY [SG]	C10L1/02	BBN 100 (biofuel) production process as an alternative material to substitute diesel fuel, essentially covers the following distillation stages: - refinery of oil waste originated from palm coconut or jatropha through distillation - the end-product proceeds into R1A, R1B, R1C reactor while adding methanol and sulphuric acid - the result is put in E1 evaporator, - the result is being proceeded into D1 distillation column to be distilled - methanol distillation result is retained in TB1 bait tank and proceeded into R3 tank, at the same time NaOH/KOH is included, - then to have VWO flow in (oil waste of fruits/palm coconut)

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				which have been evaporated in E1 and reserved in PR1 (Pre Reactor Reserved), mixed and put into the R2A and R2B (Main Reactor CSTR) through M1 together with the mixture result of R3 - the result of R2A and R2B is then proceeded into PR2 (Pre Reactor Reserved), - then is proceeded into D2 distillation column for continued process in D1 so that D1 input becomes two that is D2 and E1, and hereafter distilled as in D1 initial stage - the bottom/liquid fraction, in the form of (glycerol + soap + methyl ester) through the reboiler, in liquid condition, is recovered/withdrawn through D3 distillation column, retained in TB2 Glycerol reserved tank, - at D3 distillation column, the top/vapour fraction, in the form of methanol through the condenser, in liquid condition is proceeded to TB2, methyl ester/ biodiesel is proceeded into R4 Reactor, - at R4 neutralizing reactor being neutralized by adding sulphuric acid from TB3 tank (the sulphuric acid bait tank) and water from TB4 water reserve tank, processed as the second catalyst, which then being evaporated in E2, - the evaporation result, the top fraction consisting of water + soap + salt is retained in TB5 Dirty Water Reserved Tank, and the bottom fraction in the form of biodiesel 100 (futher-on called as Biofuel BBN-100 being the substitution of diesel fuel) is reserved in the Biofuel BBN-100 Product Tank.
EP1989250	WO2007EP51616 20070220; EP20060110172 20060220; EP20070726437 20070220	SIKA TECHNOLOGY AG [CH]	C08J5/18; B60K15/03; C08L27/06	Biodiesel -resistant plastics foil
KR20080070988	KR20070008991 20070129	SK ENERGY CO LTD [KR]	C10G1/02; C10G3/00; C10L1/32	Method of making biodiesel with good low-temperature performance from palm oil
EP1990398	GB20070009100 20070511	SMET ENGINEERING S A NV DE [BE]	C10L1/19; C07C67/03; C10L1/02; C11B1/02; C11B3/06;	This invention provides a_process for forming fatty acid esters of C 1-4 alkyl alcohols by alkaline transesterification of a glyceride oil, comprising the steps of: (a) providing a glyceride oil with a free fatty acid content below 2 % more preferably below 0.5 weight % expressed as oleic acid; (b) mixing said glyceride oil

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			C11C3/10	with at least a part of one or more alcoholic phases originating from the alkaline transesterification as referred to above; (c) separating the mixture thus formed into a heavy, alcoholic phase and a light, pre-treated fatty phase; and (d) transesterifying said pre-treated fatty phase with said C 1-4 alkyl alcohols. The transesterified product can be used in biodiesel production.
WO2008151149	US20070941581P 20070601; US20070959174P 20070710; US20070968291P 20070827; US20080024069P 20080128	SOLAZYME INC [US]; TRIMBUR DONALD E [US]; IM CHUNG-SOON [US]; DILLON HARRISON F [US]; DAY ANTHONY G [US]; FRANKLIN SCOTT [US]; CORAGLIOTTI ANNA [US]	C12M1/00; C12P5/00	The invention provides methods and compositions useful for the production of oil, fuels, oleochemicals, and other compounds in microorgansims. In particular, the invention provides oil-bearing microorganisms and methods of low cost cultivation of such microorganisms. The invention also provides microbial cells containing exogenous genes encoding, for example, a lipase, sucrose transporter, sucrose invertase, fructokinase, a polysaccharide-degrading enzyme, fatty acyl-ACP thioesterase, fatty acyl-CoA/aldehyde reductase, fatty acyl-CoA reductase, fatty aldehyde reductase, fatty aldehyde decarbonylase, and/or an acyl carrier protein. The invention also includes methods of manufacturing transportation fuels such as renewable diesel, biodiesel , and renewable jet fuel.
US2008289248	US20070752666 20070523	SOUTHERN ILLINOIS UNIVERSITY C [US]	C10L1/19; C07C67/08	Provided herein are processes for the production of biodiesel . In particular, provided is an esterification process in which an alcohol reacts with free fatty acids in a lipid material comprising free fatty acids and glycerides in the presence of an immobilized zirconium(IV) metal salt to form fatty acid alkyl esters. Also provided is combination process in which an esterification reaction converts the free fatty acids in a lipid material to fatty acid alkyl esters and a transesterification reaction converts the glycerides in the material to fatty acid alkyl esters.
EP1975393	WO2007JP50194 20070111; JP20060009282 20060117	SUGIOKA TETUO [JP]; SAKAMOTO AKIRA [JP]	F02D19/06; C10L1/02; F02B43/00; F02B67/00; F02D19/02; F02D19/12; F02M21/02; F02M37/00	Objective A bio -diesel fuel engine system and bio -diesel fuel engine operating method capable of producing a biomass fuel from a liquid state biomass source material of a fat-containing vegetable or animal oil whereby said fuel may be combusted in a conventional diesel engine while providing the benefits of low fuel consumption, stable engine operation, and extended engine service life, with compared to use a biomass fuel reformed by methyl-ester method. Means A surfactant is added to a liquid

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				state biomass source material of a fat-containing vegetable or animal oil, after which the material is atomized by an atomizer 1 to produce an atomized biomass fuel having a particulate diameter of less than 10[mu]m. The atomized biomass fuel is supplied to a fuel injector 51 through a biomass fuel supply system 50, and sprayed into an engine cylinder 52 by a fuel injector as the fuel which powers a diesel engine 53.
WO2008132917	JP20070112823 20070423	SUN CARE FUELS CORP [JP]; MATSUMURA MASATOSHI [JP]; ITO JUNKO [JP]	C10L1/02; C10L1/08; C10L1/18; C11C1/00; C11C3/10	[PROBLEMS] With respect to a mixed fuel consisting of biodiesel and light oil, to provide a fuel for diesel engine that excels in low-temperature fluidity, irrespective of the fatty acid composition of fat or oil raw material for use in biodiesel production. [MEANS FOR SOLVING PROBLEMS] A mixed fuel for diesel engine excelling in low-temperature fluidity is produced by loading a mixed fuel containing at least biodiesel and light oil with 0.03 to 2.0 wt.% of reforming agent obtained by ozonizing a vegetable oil.
NZ562307	US20040945339 20040920; NZ20050542536 20050920	SUNHO BIODIESEL CORP	C07C67/48; C11C3/00; C11C3/10; C12M1/40; C12P7/62	A system for generating an alkyl ester that is suitable for use as a fuel is disclosed wherein the system comprises: a first subsystem including a first reactor having a first inlet to receive a first mixture comprising a first reactant, a second reactant, and an inert solvent to dissolve the first and second reactants, a first enzyme to facilitate a reaction between the first and second reactants to generate a reaction product, and a first outlet to output the reaction product, the inert solvent, and other components;and a second subsystem including a second reactor having a second inlet to receive a second mixture comprising additional second reactant, an inert solvent, at least a portion of the reaction product, and the other components from the first outlet, a second enzyme to facilitate a reaction between the second reactant and the other components to generate more reaction product, and a second outlet to output the reaction product, including the reaction product received at the inlet of the second inlet and the reaction product generated from the reaction between second reactant and the other components.
JP2008156457	JP20060346056 20061222	T RAD CO LTD [JP]	C08J11/10; B29B17/00;	PROBLEM TO BE SOLVED: To attain recycling of an alkaline waste liquid discharged when a bio -diesel fuel is manufactured

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			C10G1/10	from a waste vegetable oil by an alkali catalyst method, and to prevent acidification of a decomposition oil obtained by thermally decomposing polystyrene. - SOLUTION: In the thermal decomposition method for producing the decomposition oil by thermally decomposing a polystyrene solution in which polystyrene is dissolved in a solvent, when the bio -diesel fuel is manufactured from the waste vegetable oil by the alkali catalyst method, the discharged alkaline waste liquid is mixed with the polystyrene solution, and the mixture solution is fed to a thermal decomposition apparatus to thermally decompose the polystyrene, thereby, acidification of the obtained decomposition oil is prevented. - COPYRIGHT: (C)2008,JPO&INPIT
US2008209798	US20060996129 20060626; US20050701136P 20050721; WO2006US24703 20060626	TAMINCO N.V. [BE]	C10L1/222	Fuels containing biodiesel , petroleum distillates, or blends of these may be treated by the addition of small amounts of one or more alkanolamines according to formula (I) <?in-line-formulae description="In-line Formulae" end="lead"?>Rn-N(CH2CHR1OH)3-n ; (I)<?in-line-formulae description="In-line Formulae" end="tail"?> wherein n is 1 or 2, R<1 >is H or CH3, and each R is independently selected from the group consisting of hydrogen and branched, linear, and cyclic C3-C24 alkyl groups, provided that at least one R is not hydrogen. Fuels treated in this manner may be less corrosive toward metals with which they are in contact.
US2008244965	US20080062499 20080403; US20070909908P 20070403	TARBET KENNETH KENNETH HAZEN [US]	C10L1/18	In a first aspect, systems and methods for producing biodiesel fuel include a modular production unit incorporated onto a single platform or into a housing for ease of relocatability. The modular production unit preferably includes a mixing unit, a reaction chamber, a separation unit, a filtering unit, all incorporated onto or into a self-contained platform or housing that is able to be easily relocated. In a second aspect, the modular production unit is combined with additional fixed and/or relocatable components to provide a biodiesel processing plant.
CN101314720	CN20081053866 20080717	TIANJIN ZHONGRONGYUAN ENERGY D [CN]	C10G3/00; C10L1/00; C11C3/04	The invention relates to a multi-component bio -diesel and the preparation method thereof. The multi-component bio -diesel comprises, by weight percentage, acidic oil 50 to 65 percent, COH3OH 10 to 20 percent, solvent oil 5 to 15 percent,

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				isopropanol 1 to 5 percent, and ZRYJ 0.5 to 3 percent, wherein the acidic oil can be made into the multi-component bio -diesel product by esterification and synthesis with other materials. The multi-component bio -diesel has the advantages of good burning property, moderate kinematic viscosity, moderate flash point (60 to 70 DEG C), good safety and safer use and storage, and can be used for effectively improving engine performance and reducing abrasion of mechanical components. Additionally, the method has the advantages of advanced process, simple flow, simple operation, stable product quality, low cost, less investment, no pollution, safe and reliable use, wide material sources, and no discharge of sewage and toxic and harmful gas in the production process, and can meet the requirement for environment protection.
JP2008231430	JP20080103046 20080411	TOHOKU TECHNO ARCH CO LTD [JP]; MITSUBISHI CHEM CORP [JP]	C11C3/10	PROBLEM TO BE SOLVED: To efficiently produce a fatty acid ester at a high reaction rate under a mild condition in the transesterification reaction using an ion exchange resin which can cut a step for separating a catalyst which is the defect of a uniform phase alkali catalyst. - SOLUTION: A device for producing the fatty acid ester has an introducing port of a mixture of oils and fats and alcohols on one side of a column filled with an anion exchanger and a recovering port of the fatty acid ester produced on the other side of a column, in which reaction temperature is 10-70[deg.]C. The amount of the produced fatty acid ester based on the unit weight of an ion exchange resin and on the time is large because the device uses oils and fats at a high concentration. That is to say, the productivity of the fatty acid ester is large. The device contributes to a reduction in the environmental load by utilizing the resultant fatty acid ester in a biodiesel fuel. - COPYRIGHT: (C)2009,JPO&INPIT
WO2008081898	JP20060355941 20061228	TOHOKU TECHNO ARCH CO LTD [JP]; MITSUBISHI CHEM CORP [JP]; YONEMOTO TOSHIKUNI [JP];	C07C67/03	Disclosed is a method for regenerating the catalytic activity of a given strongly basic anion exchange resin to a satisfactory level after the resin is used in the production of a fatty acid ester for a biodiesel fuel. When the strongly basic anion exchange resin has a tertiary amine having a pKa value of 9.8 or less bound chemically to an insoluble carrier, the resin which has been used

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		KITAGAWA NAOMI [JP]; TAKAYANAGI HIROAKI [JP]		in the production of a fatty acid ester for a biodiesel fuel is washed with a weakly acidic solution, subjected to the replacement of a counter ion with an aqueous alkaline solution, and swelled with a solvent.
WO2008084470	IL20070180598 20070108	TRANS BIODIESEL LTD [IL]; BASHEER SOBHI [IL]	C12N11/00; C10L1/08; C12N9/96; C12P7/64	Disclosed is a process for the preparation of an interfacial enzyme immobilized on an insoluble support, by providing a bi-phase system comprised of an aqueous buffer solution and at least one first organic solvent; mixing said interfacial enzyme with the bi-phase system provided; adding the support to the obtained mixture and mixing; and isolating from the mixture obtained in the last step the interfacial enzyme immobilized on said support. The produced enzyme is locked in its catalytically active confirmation, and thus exhibits improved activity and stability. Also disclosed are uses of the produced enzymes, particularly in the preparation of biodiesel .
WO2008139455	IL20070183084 20070509	TRANSBIODIESEL LTD [IL]; BASHEER SOBHI [IL]	C12N9/20	Disclosed are preparations of modified interfacial enzymes, particularly lipases and phospholipases, immobilized on a solid support, wherein the enzyme is surrounded by hydrophobic microenvironment, thereby protected from deactivation and/or aggregation in the presence of hydrophilic agents, substrates and/or reaction products. The enzyme may be protected by being covalently bonded with lipid groups which coat the enzyme, or by being immobilized or embedded in a hydrophobic solid support. Also disclosed are processes for the preparation of the hydrophobically protected enzymes. The enzymes may be efficiently used in the preparation of biodiesel .
JP2008239372	JP20070079589 20070326	UBE MATERIAL IND LTD [JP]	C04B2/06; C04B24/02	PROBLEM TO BE SOLVED: To provide an application capable of utilizing glycerol byproduced in manufacturing of a fatty acid alkyl ester from fats and oils and aliphatic alcohol as raw materials without requiring an intricate refining treatment. - SOLUTION: The method for manufacturing slaked lime includes a step of generating a reaction product including a fatty acid alkyl ester , glycerol and calcium-based solid catalyst by reacting the fats and oils and the aliphatic alcohol in the presence of the calcium-based solid catalyst selected from the group consisting of calcium oxide and calcium hydroxide, a step of mixing quicklime

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				prepared separately from the glycerol and water and reacting the quicklime and water in the presence of the glycerol. - COPYRIGHT: (C)2009,JPO&INPIT
WO2008102949	KR20070017415 20070221	UM SEONG-IL [KR]; HAN SANG-WOOK [KR]	C07C67/40	Disclosed herein is a process for producing methyl ester by transesterif icat ion of fat or oil with methanol in the presence of a strong base catalyst, the process composed of : removing methanol from the reaction mixture by evaporation to produce a methyl ester layer; cooling the methyl ester layer; and removing the residual catalyst by either filtration or centrifugal separation to recover methyl ester. The process is advantageous in that it can produce high purity & high yield methyl ester, useful for biodiesel application, without waste water byproduct, realizing an environmentally friendly and economical process.
CN101220290	CN20071063345 20070109	UNIV BEIJING CHEMICAL [CN]	C10G3/00; C10G7/00	The invention discloses a biodiesel refining method, which adopts thin-film evaporation to recover the solvent in the biodiesel and other small molecule substance and then conducts centrifugal thin-film evaporation process. The invention also conducts optimization to concrete technique parameters. The biodiesel produced by the method has the advantages of adopting the technique of thin-film evaporation and centrifugal thin-film evaporation, realizing successively feeding and successively production, solving the process difficulty of various complex trace impurities which are produced by catering waste oil raw materials. Meanwhile, a plurality of small molecule substances such as water and methanol are completely solved; inorganic matters are all transferred into distillation residual and the ash content of the product is almost reduced to zero. The product refined has light color and is very clear and transparent, and the various indexes of the product all reach German biodiesel standard DIN 51606-97. .
WO2008092115	US20070886661P 20070126	UNIV CALIFORNIA [US]; BERGMAN ROBERT G [US]; ELLMAN JONATHAN A [US]; ARCEO REBOLLO ELENA	C07C27/02	A method of synthesis of allyl alcohol from glycerol, whereby allyl alcohol is produced at a yield of about 80% or greater. The method comprising the heating of a reaction mixture of glycerol and a carboxylic acid under an inert atmosphere and distilling allyl alcohol from the reaction mixture.

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EP1964830	EP20050766060 20050615; US20040867627 20040615	UNIV CARNEGIE MELLON [US]	C07C67/03; C07C67/08; C07C69/52; C10L1/02; C10L5/00; C11C3/00; C11C3/10	Transesterification, esterification, and esterification-transesterification (both one-step and two-step) for producing biofuels. The process may be enhanced by one or more of the following: 1) applying microwave or RF energy; 2) passing reactants over a heterogeneous catalyst at sufficiently high velocity to achieve high shear conditions; 3) emulsifying reactants with a homogeneous catalyst; or 4) maintaining the reaction at a pressure at or above autogeneous pressure. Enhanced processes using one or more of these steps can result in higher process rates, higher conversion levels, or both.
EP1942095	EP20050766060 20050615; US20040867627 20040615	UNIV CARNEGIE MELLON [US]	C07C67/03; C07C67/08; C07C69/52; C10L1/02; C10L5/00; C11C3/00; C11C3/10	Transesterification, esterification, and esterification-transesterification (both one-step and two-step) for producing biofuels. The process may be enhanced by one or more of the following: 1) applying microwave or RF energy; 2) passing reactants over a heterogeneous catalyst at sufficiently high velocity to achieve high shear conditions; 3) emulsifying reactants with a homogeneous catalyst; or 4) maintaining the reaction at a pressure at or above autogeneous pressure. Enhanced processes using one or more of these steps can result in higher process rates, higher conversion levels, or both.
CN101328446	CN20081031868 20080724	UNIV CENTRAL SOUTH [CN]	C11B1/10; C05F5/00; C07C31/04; C07C31/22; C10G3/00; C11C3/00; C11C3/10	The invention provides a technique for deeply processing and comprehensively utilizing of a litsea cubeba kernel. In the invention, the litsea cubeba kernel is crushed and subject to heated reflux extraction in a Soxhlet extractor for 0.5 to 4 hours by taking a low boiling point nonlinear solvent as an extraction solvent, and the litsea cubeba kernel oil is obtained; the obtained litsea cubeba kernel oil, methanol, concentrated sulfuric acid and anhydrous sodium sulfate are mixed according to the ratio of 100:(between15 and 50):(between 1and 2):(between 3 and 5) and then put in a reaction kettle for degreaseing reaction, after the reaction, the mixed liquid are added with the anhydrous sodium sulfate to neutralize the sulphuric acid so as to obtain solid salt, by the reduced pressure distillation, the methanol is recovered and the moisture is dried, and the solid salt is removed by centrifugation; the obtained filtrate, the methanol, a phase

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				transfer catalyst and sodium hydroxide are mixed according to the ratio of 100:(between15 and 50):(between 0.1 and 1):(between 0.5 and 2) and then put in the reactor reaction kettle for ester exchange reaction, after the reaction, the concentrated sulfuric acid are added to neutralize the sodium hydroxide, the obtained mixed liquid are kept stand and layered, the upper layer of coarse biodiesel is subject to the reduced pressure distillation to obtain the finished biodiesel , and the lower layer of the methanol and the glycerin are vaporized to recover the methanol for repeated use.
CN101314138	CN20081012219 20080707	UNIV DALIAN TECH [CN]	B01J31/06; B01J31/02	The invention belongs to the novel material and novel energy technical field and relates to a method for preparing a carbonaceous solid acid catalyst and biodiesel , in particular to a method for preparing the carbonaceous solid acid catalyst and the biodiesel by directly sulfonating pure natural biomass. The method is characterized in that: pure natural and renewable biomass is used as a raw material, concentrated sulfuric acid is directly used to sulfonate the biomass into biomass-based carbonaceous solid acid catalyst, and a continuous rectification-water separation esterification reaction process is adopted to perform the catalytic esterification reaction between free fatty acid or waste grease and short chain alcohol to produce the biodiesel . The raw material adopted by the method has rich resource and low cost, is purely natural and renewable, and belongs to the waste utilization; the method has simple preparation technology, mild and controllable reaction conditions, and low manufacturing cost; the catalyst has high activity, good stability, easy recovery and no corrosion to equipment, belongs to an environment-friendly catalyst, is suitable for mass industrialized introduction of the biodiesel , and can also be used for organic reactions such as alkylation, hydrolyzation, hydration and so on.
CN101298566	CN20081012062 20080627	UNIV DALIAN TECH [CN]	C10G3/00; B01J21/18; B01J27/053; C07C67/03; C07C67/08	The invention pertains to the new material technical field, and relates to a method for preparing a carbonaceous solid acid catalyst and biodiesel by taking pure natural biological substances as raw materials. The method is characterized by: taking the pure natural and renewable biological substances as

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				the raw materials; adopting the technical route and method of low-temperature carbonization firstly, oxidation secondly and sulfonation then according to the constituent and structural characteristics to prepare the bio-carbonaceous solid acid catalyst; and adopting a continuous rectification-water separating esterification reaction technology to produce the biodiesel by carrying out the catalytic esterification reaction of a free fatty acid or waste oil and short chain alcohol. The raw materials adopted by the invention are rich in resources, low in price, pure natural and renewable, which pertains to waste utilization; the preparation technology is simple with moderate and controllable reaction conditions; the catalyst has the advantages of high activity, good stability, easy recycling and no corrosion to equipment, which is an really environment-friendly catalyst, thus being applicable to the large scale industrial production of the biodiesel . The method can also be applied to a plurality of organic reactions such as alkylation, hydrolysis and hydration, etc.
CN101225323	CN20081010373 20080203	UNIV DALIAN TECH [CN]	C10G3/00	The invention relates to a preparation method of biodiesel . 10 to 1000g material with seed fat is mechanically crushed into 10 to 60 mesh grains, and then added into a supercritical extraction apparatus at packed bed mode to react after adding high pressure CO2 in 10 to 30 MPa and 30 to 70 degrees C and a certain amount of higher alcohol with. The contact reacting time of the solvent and materials is controlled and then the mixed solution extracted from the supercritical extraction apparatus is sent to a high pressure fixed bed reactor with catalyst to carry on the ester exchange reaction. The pressure is controlled in 10 to 30 MPa, the temperature is at 40 to 80 degrees and reaction time is for 0.5 to 20 hours. The product from the ester exchange reaction is sent to a separator to separate and then recycled after measuring by gas phase CO2. The liquid phase (sterol, biodiesel and glycerin) is decompressed and distilled to recover the sterol and at last the biodiesel and the glycerin are separated by water washing method. The preparation method can obtain the biodiesel from the material by one-step in gentle condition, and also has the advantages of convenient craft and low cost.

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EP1991642	WO2007IB50739 20070306; IT2006RM00120 20060308	UNIV DEGLI STUDI UDINE [IT]	C10L1/02; C09K15/34; C10L1/18; C10L10/00; C10L10/02; C10L10/04; C11B5/00	Use of unsaponifiable matter of grape seed oil as antioxidant additive for biodiesel
CN101249449	CN20081035287 20080328	UNIV EAST CHINA NORMAL [CN]	B01J27/12; B01J29/70; C10G3/00	The invention discloses a novel solid base catalyst and application thereof in the preparation of biodiesel oil. The catalyst is prepared by loading potassium fluoride as an active component on carriers; and calcining at a high temperature. The carrier is alumina, activated carbon or diatomite. The biodiesel oil is prepared by transesterification including adding oil and fat, low carbon alcohol and the solid base catalyst into a three-neck container; refluxing under heating and stirring; filtering to remove the catalyst; demixing the filtrate; separating glycerol at the lower layer, adding NaHCO3 solution into the mixture at the upper layer; washing until a neutral condition; drying with anhydrous MgSO4; and reduced pressure distilling. The application of the catalyst in the preparation of biodiesel oil has the advantages of high yield, cheap catalyst, small catalyst consumption, mild reaction conditions, short reaction time, reutilization of catalyst, environment friendliness and low requirement to raw material.
CN101250423	CN20081035291 20080328	UNIV EAST CHINA NORMAL [CN]	C10G3/00; B01J31/02; C11C3/10	The invention discloses a method for utilizing naphthalenesulfonic acid methylal to be catalyst to prepare biodiesel fuel, wherein the biodiesel fuel adopts an ester exchange method to prepare, the specific steps comprises the following steps: adding grease, low alcohol and naphthalenesulfonic acid methylal catalyst in a three-necked container to heat up, return flow and stir, and then filtering material which is reacted, leaching catalyst, separating liquid, separating glycerin on the lower layer, adding NaHCO3 solution in mixture on the upper layer, washing to be neutral, drying with waterless MgSO4, reducing pressure, distilling and getting biodiesel fuel. The method has the advantages of high yield, cheap catalyst, little dosage of catalyst, mild reaction condition and short reaction time, catalyst can be repeatedly used, which

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				has no environmental pollution and no side reaction such as side reaction and the like, and raw material need not processing.
CN101249431	CN20081035282 20080328	UNIV EAST CHINA NORMAL [CN]	B01J23/04; B01J23/06; B01J29/70; C10G3/00	The invention discloses a novel solid base catalyst and application thereof on syntheses of the biodiesel . The catalyst is prepared by loading potassium carbonate as an active component on a support and calcining at a high temperature. The biodiesel is prepared by transesterification including adding oil and fat, low carbon alcohol and the solid base catalyst into a three-neck container; refluxing under heating and stirring; filtering to remove the catalyst; demixing the filtrate; separating glycerol in the lower layer, adding NaHCO3 solution into mixture at the upper layer; washing the container to neutrality; drying with anhydrous MgSO4; reducing the pressure and distilling. The application of the catalyst on the preparation of the biodiesel has the advantages of high yield, cheap catalyst, small catalyst consumption, mild reaction conditions, short reaction time, reutilization of the catalyst, environment friendliness and low requirement for the raw material.
CN101249432	CN20081035286 20080328	UNIV EAST CHINA NORMAL [CN]	B01J23/04; B01J23/06; B01J27/232; C10G3/00	The invention discloses a solid base catalyst and application thereof on the preparation of biodiesel . The catalyst is prepared by the solid-phase reaction between metal nitrate and base or alkali carbonate and calcining at a high temperature. The biodiesel is prepared by transesterification including adding oil and fat, low carbon alcohol and the solid base catalyst into a three-neck container; refluxing under heating and stirring; filtering to remove the catalyst; demixing the filtrate; separating glycerol at the lower layer, adding NaHCO3 solution to mixture at the upper layer; drying with anhydrous MgSO4; reducing the pressure and distilling. The application of the catalyst on the preparation of the biodiesel has the advantages of high yield, cheap catalyst, small catalyst consumption, mild reaction conditions, short reaction time, reutilization of the catalyst, environment friendliness and low requirement for the raw material.
CN101249450	CN20081035288 20080328	UNIV EAST CHINA NORMAL [CN]	B01J27/12; B01J23/04; B01J27/232;	The invention discloses a solid base catalyst and application thereof in the preparation of biodiesel oil. The catalyst is prepared by directly grinding solid phase at room temperature. The

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			B01J29/70; C10G3/00	biodiesel oil is prepared by transesterification including adding oil and fat, low carbon alcohol and the solid base catalyst into a three-neck container provided with an electromagnetic stirrer and a thermometer; refluxing under heating and stirring; filtering to remove the catalyst; demixing the filtrate; separating glycerol at the lower layer, adding NaHCO3 solution into the mixture at the upper layer; washing until a neutral condition; drying with anhydrous MgSO4; and reduced pressure distilling. The application of the catalyst in the preparation of biodiesel oil has the advantages of high yield, cheap catalyst, small catalyst consumption, mild reaction conditions, short reaction time, reutilization of catalyst, environment friendliness and low requirement to raw material.
CN101250422	CN20081035289 20080328	UNIV EAST CHINA NORMAL [CN]	C10G3/00; B01J31/04; C11C3/10	The invention discloses a method for utilizing condensed polynuclear aromatic hydrocarbon resin carbon-basedcarbon-based solid acid to be catalyst to prepare biodiesel fuel, wherein the biodiesel fuel adopts an ester exchange method to prepare, the specific steps comprises the following steps: adding grease, low alcohol and condensed polynuclear aromatic hydrocarbon resin carbon-basedcarbon-based solid acid catalyst in a three-necked container to heat up, return flow and stir, and then filtering material which is reacted, leaching catalyst, separating liquid, separating glycerin on the lower layer, adding NaHCO3 solution in mixture on the upper layer, washing to be neutral, drying with waterless MgSO4, reducing pressure, distilling and getting biodiesel fuel. The method has the advantages of high yield, cheap catalyst, little dosage of catalyst, mild reaction condition and short reaction time, catalyst can be repeatedly used, which has no environmental pollution and no side reaction such as side reaction and the like, and raw material need not processing.
CN101245254	CN20081035290 20080328	UNIV EAST CHINA NORMAL [CN]	C10G3/00; B01J31/02	The invention discloses a preparation method of bio -diesel with the catalyst of carbon-based solid acid, the bio -diesel is prepared through an ester-transferring method, the detailed steps are as follows: putting oil, lower alcohol and carbon-based solid acid as the catalyst into a three-necked container for heating, refluxing and stirring, filtering reaction materials, filtering out the catalyst,

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				separating filter liquor, separating the glycerol at the low layer, putting NaHCO3 solution into the high-layer mixture, washed until the solution is neutral, dried with absolute MgSO4, vacuum distillation, and getting bio -diesel . The method has the advantages of e high yield, cheap catalyst, little amount of catalyst, mild reaction condition, short reaction time, repeated use of catalyst, no environmental pollution, no side reaction like saponification, and low requirement for raw materials.
CN101249453	CN20081035283 20080328	UNIV EAST CHINA NORMAL [CN]	B01J27/232; B01J23/04; C10G3/00	The invention discloses a solid base catalyst and application thereof in biodiesel synthesis. The catalyst is prepared by allowing organic metal salt and alkali or alkali carbonate to a solid phase reaction and calcining at a high temperature. The biodiesel is synthesized by ester exchange, by adding grease, low carbon alcohol and the solid base catalyst into a three-necked container to heat for refluxing under stirring, filtering to obtain catalyst, demixing the filtrate to obtain lower layer glycerol and upper layer mixture, adding NaHCO3 solution to the upper layer mixture, washing until a neutral condition, drying with anhydrous MgSO4, and vacuum distilling. The catalyst for biodiesel synthesis has the advantages of high yield, cheap price, small consumption amount, mild reaction condition, short reaction time, repeated use of the catalyst, no environmental pollution and low requirement for raw material.
CN101249454	CN20081035284 20080328	UNIV EAST CHINA NORMAL [CN]	B01J27/232; B01J29/70; C10G3/00	The invention discloses a solid base catalyst and is application in biodiesel synthesis. The catalyst is prepared from organic metal salt and aluminium oxide or diatomite by grinding and mixing at room temperature, and calcining at high temperature. The biodiesel is synthesized by ester exchange, by adding grease, low carbon alcohol and the solid base catalyst into a three-necked container to heat for refluxing under stirring, filtering to obtain catalyst, demixing the filtrate to obtain lower layer glycerol and upper layer mixture, adding NaHCO3 solution into the upper layer mixture, washing until a neutral condition, drying with anhydrous MgSO4, and vacuum distilling. The catalyst for biodiesel synthesis has the advantages of high yield, cheap price, small consumption amount, mild reaction condition, short reaction

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				time, repeated use of the catalyst, no environmental pollution and low requirement for raw material.
CN101250105	CN20081035285 20080328	UNIV EAST CHINA NORMAL [CN]	C07C67/03; B01J31/02; C10G3/00	The invention discloses a method for using p-toluene sulphonicp acid formaldehyde condensate as catalyst to synthesize biodiesel , while the biodiesel is synthesized by ester exchange method. The method comprises adding oil, lower alcohol and p-toluene sulphonicp acid formaldehyde condensate catalyst into a three-neck vessel, heating, refluxing and mixing, filtering the reacted materials, filtering out catalyst, separating the filter liquor, separating out the lower glycerol, and adding NaHCO<3> solution into upper mixture, washing until neutral, drying via anhydrous MgSO<4>, depressurizing and distilling to obtain biodiesel . The method has the advantages of high yield, cheap catalyst, low catalyst consumption, mild reaction conditions, short reaction time, recovery catalyst, non environment pollution, non side reaction as saponification and low demand on materials.
CN101250546	CN20081033414 20080201	UNIV EAST CHINA SCIENCE & TECH [CN]	C12N15/55; C12N1/21; C12N9/20; C12N15/70; C12P7/64; C12P41/00	The invention provides a lipase gene, lipase which is encoded by the lipase gene, engineering bacteria which expresses the lipase and the application of the engineering bacteria. An amino acid sequence which is encoded by the lipase gene which is provided by the invention is displayed in SEQ ID NO:2. The engineering bacteria which is provided by the invention can be used in producing biodiesel through catalyzing low temperature whole cells, the catalytic ability is little affected by the temperature under the temperature of 10DEG C-25DEG C, thereby the stability is good, the heat which is needed in reaction is lowered, which enables the production of the biodiesel to save more energy, furthermore, the process for processing cells is very simple, and the cells can be repeatedly used after being processed, which greatly lowers the production cost of enzyme, simplifies the production process, and increases the production efficiency, simultaneously, the invention paves a precedent that genetic engineering bacteria which is obtained through transforming escherichia coli with the lipase genes and is soluble-expressed is utilized to catalyze whole cells, which provides a new thought for building the genetic engineering bacteria and catalyzing the

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				whole cells and lays the foundation to obtain the engineering bacteria which is more optimized further.
CN101302433	CN20081039304 20080620	UNIV EAST CHINA SCIENCE & TECH [CN]	C10G3/00; B01J23/02; B01J27/138; B01J27/232; B01J27/25; C11C3/10	The invention discloses a method for preparing biodiesel through exchange reaction between ultra-alkali catalytic fat and low-carbon alcohol esters. The method is as follows: reactant such as low-carbon alcohols, fat, cosolvent and so on are added into a four-mouth flask; the mixture is heated to be between 40 and 150 DEG C by means of water bath; load solid alkali catalyst is added into the mixture; the ester exchange reaction temperature is between 40 and 130 DEG C and the constant temperature reaction time is between 1 and 10 hours, wherein, the amount of the load solid alkali catalyst is 1 to 10 percent of the weight of the fat; the amount of the cosolvent is 5 to 80 percent of the weight of the fat; the mole ratio of the low-carbon alcohols to the fat is between 3 to 1 and 20 to 1; the reaction is stopped; the load solid alkali catalyst is filtered; excessive low-carbon alcohols and cosolvent are removed after vacuum distillation; the biodiesel on the upper layer and by-product glycerol on the lower layer are centrifugally separated in a mixture product, and then the biodiesel is obtained. The method has the advantages of simplifying the flow, reducing the environmental pollution, further reducing the product cost and improving the market competitive power of the biodiesel ; and the ester exchange yield can reach about 90 percent.
BRPI0605742	BR2006PI05742 20061213	UNIV FED DO PARANA [BR]	B27K9/00	"Termomoldagem direta de laminados compósitos baseados em torta de ricinus communis (mamona) plastificada com glicerol bruto recuperado do processo de transesterificação de óleos vegetais, reforçados com fibras de origem natural" A presente patente tem por objetivo o desenvolvimento dos processos de termomoldagem direta de torta de mamona derivada do processo de extração do óleo vegetal, plastificada com glicerol derivado do processo de transesterificação de óleos vegetais (processo de fabricação do biodiesel) e reforçada com fibras vegetais e/ou minerais e utilizaÇÃo desses materiais no setor de embalagens, na confecÇÃo de objetos decorativos e ornamentais, em peþas moldadas para artesanato e usos variados. O principal aspecto

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				da patente se refere ao processamento da massa polimérica, e do reaproveitamento de materiais residuais de outros processos industriais, e do agente de reforço com a matriz polimérica, através de uma interface química, que atua como "cola" e mantém o agente disperso e firmemente ligado a matriz polimérica, condição ideal para a otimização das propriedades químicas e físicas resultantes.
BRPI0605499	BR2006PI05499 20061222	UNIV FED DO PARANA [BR]	C11C3/00; B01J23/16	"Uso de molibdato de sódio na transesterificação de óleos vegetais para a obtenção de ésteres de ácidos graxos através de catálise heterogênea". Esta invenção trata da utilização do oxossal molibdato de sódio (Na~ 2~MoO~ 4~) como catalisador heterogêneo para a transesterificação dos triacilglicerídeos existentes nos óleos vegetais de oleaginosas como a soja para a obtenção de ésteres metílicos e etílicos de ácidos graxos para uso combustível - biodiesel . Alem de facilitar o processo de tratamento do produto obtido, a utilização deste catalisador sólido permite altos rendimentos, redução do custo processual e menor geração de resíduos, considerando sua capacidade de reutilização. A principal vantagem na utilização deste catalisador está relacionada à baixa temperatura empregada na reação, tempos reacionais relativamente pequenos, alto grau de reciclabilidade e facilidade de síntese do catalisador ou disponibilidade no comércio, o que favorece a implementação de um processo industrial técnica e economicamente viável.
CN101284822	CN20081071183 20080606	UNIV FUJIAN [CN]	C07D303/42	The invention relates to a method for synthesizing dihydric alcohol epoxy fatty acid and is characterized in that: AlCl3 ionic liquid is used as catalyst, 100 weight portions of epoxy fatty acid methyl ester , 15 to 50 weight portions of dihydric alcohol and 1 to 10 weight portions of ionic liquid catalyst are mixed according to the proportion, N2 is aerated, the mixture is stirred to increase the temperature to between 140 and 150 DEG C; a reaction under constant temperature is performed until no liquid is evaporated, the heating is stopped, and the catalyst is removed to obtain dihydric alcohol epoxy fatty acid. In the synthetic process, ion liquid is used as the catalyst to react, has good catalytic activity, is easy to separate from the product after the reaction, can be

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				repeatedly used, and have low corrosiveness and good industrial application prospect. The dihydric alcohol epoxy fatty acid synthesized by the method improves extraction resistant and volatility resistant performances of epoxy fatty acid plasticizer in PVC products, and has good market popularization prospect.
CN101284821	CN20081071182 20080606	UNIV FUJIAN [CN]	C07D301/12; C07D303/42	The invention relates to a method for preparing epoxy fatty acid methyl ester based on ionic liquid catalysis, comprising the following steps that: 100 portions of fatty acid methyl ester with the iodine value of more than 80 or biodiesel oil, 10 to 30 portions of methanoic acid, and 1 to 10 portions of ionic liquid catalyst are evenly mixed, and then are stirred to increase the temperature to between 50 and 70 DEG C; 30 to 70 portions of hydrogen peroxide with the concentration of between 28 and 55 percent is dripped and is controlled to finish within two hours; the heat insulation is continued for 3 to 6 hours, and the reaction is stopped when the epoxy value of the product is up to more than 3.0. The catalyst is removed, and epoxy fatty acid methyl ester is obtained by quickly and centrifugally separating. The method is characterized in that: ionic liquid is used as the catalyst; compared with the prior method using concentrated sulfuric acid as the catalyst, the process has the advantages of quick reaction speed, short process flow, simple post-treatment, low corrosiveness, clean process, repeatedly used catalyst and so on, and has strong industrial application prospect.
CN101280232	CN20081028110 20080515	UNIV GUANGDONG TECHNOLOGY [CN]	C10L1/04; C10L1/02	The invention discloses mixed fuel which contains diesel, bio -diesel and ethanol and the preparation method; the mixed fuel is part by volume composed of 21%-30% of ethanol with the concentration of 97%-99.7%, 40%-58% of 0# diesel and 21%-30% of bio -diesel ; the three compositions of diesel, bio -diesel and ethanol are mixed to prepared the mixed fuel which has simple process; the mixed fuel can be applied to the diesel engine without changing the diesel engine structurally; as indicated in the engine bed experiment, the power of the diesel engine is not changed basically and the oil consumption rate is increased a little; the carbon monoxide is reduced by 30%-80%, nitrogen oxides are reduced by 10%-40%and smoke intensity is

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				reduced by 70%-80%; the discharge property is improved obviously; the mixed fuel can replace the 0# diesel and has good environmental benefits.
CN201144227Y	CN20072175181U 20071211	UNIV HENAN AGRICULTURAL [CN]	C10G3/00	The utility model provides a continuous biodiesel production device, which consists of containers, feed pipes, reactors and discharge pipes, wherein, a pump is installed on the feed pipes; at least two reactors with the same structure are provided; the lower parts of the reactors are communicated with the containers via the feed pipes, while the upper parts of the reactors are communicated with the next containers via the discharge pipes; lipase is filled in the reactors. The device provided by the utility model is capable of producing a variety of products of different standards, and the quality of the products is higher. The device has simple structure and is capable of carrying out continuous production, thereby the productivity is increased, and the continuous biodiesel production device lays a good foundation for industrialized mass production.
CN101294094	CN20071052065 20070429	UNIV HUAZHONG AGRICULTURAL [CN]	C10G3/00; B01J23/30; B01J23/882; B01J27/053; B01J27/12; B01J27/199; B01J27/232	The invention belongs to the field of bio -diesel preparation technology and discloses a novel method for producing bio -diesel by using nanosolid heteropolyacid and heteropolybase catalyst. The method comprises the following steps: adding raw material oil and methanol in a reaction system, and catalyzing with a catalyst with a diameter particle of 25 to 50 nm. The catalyst is selected from one or the combination of ammonium persulfate/zirconium dioxide-titanium dioxide, ammonium persulfate/gamma-aluminum oxide-silicon oxide, W-Si heteropolyacid, Mo-V-P heteropolyacid, Co-Mo-Al-Mg heteropolybase or potassium carbonate/gamma-aluminum oxide, potassium fluoride/calcium oxide, potassium fluoride/calcium oxide-magnesium oxide. The amount of the catalyst is 1 to 6% the weight of the raw material oil, the alcohol/oil molar ratio is (6 to 48):1, and the reaction is carried out at a temperature of 60 to 90 DEG C and under normal pressure for 1 to 10 h to obtain neutral bio -diesel after separating the glycerol and distilling the methanol. In the method, the remarkable advantages of the nanosolid catalyst are exerted fully, and the post-treatment

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				process of the bio -diesel has simple operation and high yield and meets the requirement for green production.
CN101318988	CN20081048210 20080627	UNIV HUAZHONG AGRICULTURAL [CN]	C07J75/00; C07C401/00	The invention discloses sterol extracted from crude glycerol and an extraction method thereof. The sterol is extracted through the following steps that: crude glycerol is added to alkaline ethanol aqueous solution with the concentration between 0.5-1.25 mol/L as extracting solution according to the solid-liquid ratio between 1:0.05 and 1:50 g/ml, and then saponification treatment is carried out with the stirring speed between 100 and 500 r/m at a temperature between 10 and 50 DEG C; extracting agent 2-10 times the volume of saponified-cooled solution is added to saponified-cooled solution, and is well stirred for 10-50 min under the stirring speed between 100 and 500 r/min at a temperature between 10 and 50 DEG C; mixed liquid is kept to stand and layered or centrifuged to remove saponification solution; extracting liquid is repeatedly washed for a plurality of times by using water and alkaline ethanol solution with the concentration between 0.1 and 1 mol/L, has the extracting agent recovered, and is dried, and then crude sterol can be obtained. The extraction method adopts a saponification method, uses the alkaline ethanol solution as the saponification solution, is simple and convenient in extraction condition, high in yield of extracted sterol, capable of greatly improving the added value of the processing and utilization of glycerol which is a byproduct of biodiesel , and has good popularization and application prospects in industry.
CN101294093	CN20071052063 20070429	UNIV HUAZHONG AGRICULTURAL [CN]	C10G3/00; C11C3/04; C11C3/10	The invention belongs to the field of bio -diesel production and discloses an integrated production process and a device, wherein the process includes a step of constructing a continuous reaction system. The process comprises the following steps: (1) adding raw material oil and methanol into the reaction system including independent work units connected with each other through pipelines, pumps and valves, wherein each work unit is composed of a condensation segment, a reaction segment and a separation segment; (2) adding solid nanometer catalyst with a particle diameter of 25 to 50 nm in a reaction tower at an amount

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				of 1 to 6% the weight of the raw material oil, and keeping the molar ratio of alcohol to oil at (6 to 48):1; (3) adding methanol 5 to 8 times the amount of the raw material oil, counter-contacting the methanol steam with the raw material oil, controlling the reaction temperature above the boiling point of methanol, and keeping the temperatures of a separation tower and the reaction tower at 65 to 95 DEG C and the reaction time of 2 to 10 h; (4) adding the catalyst at a height 2/3 the main body height of the reaction tower; (5) controlling the pressure in the reaction tower larger than about 25 to 45 mmHg; and (6) online separating glycerol to obtain the neutral bio -diesel . The invention also discloses a special device suitable for the integrated production process.
CN101284999	CN20081047784 20080521	UNIV HUAZHONG SCIENCE TECH [CN]	C10G3/00; C11C3/10; C12N9/20	The invention provides a method for making biodiesel through enzymatic method, comprising the following concrete steps of utilizing woody plant oil and oil processing waste as raw oil, adding the raw oil and low-carbon alcohol into a reaction vessel, adding in immobilized G63 lipase as catalyst carry out transesterification, separating oil phase out from the reaction vessel, reducing pressure, distilling and recovering the low-carbon alcohol, and then biodiesel can be obtained. Compared with the prior art, the method improves the unsaturated fatty acid content in biodiesel , so as to improve the yield of dimeric ester, prolong biodiesel industry chain as well as product attributes and reduce the production cost of biodiesel greatly.
KR20080090855	KR20070034231 20070406	UNIV IND & ACAD COLLABORATION [KR]	C12P7/00; C10L1/32	Method for producing bio -diesel in supercritical fluid condition using lipase
CN101260311	CN20081025459 20080429	UNIV JIANGSU POLYTECHNIC [CN]	C10G3/00; C07C67/465; C07C69/52; C11C3/04	The invention provides a method to produce bio -diesel and dimerized acid ester from combination of animal and plant lipids. Esterification is performed between animal/plant lipids and a lower alcohol containing 1-4 carbons, the product of esterification is separated into saturated and un-saturated lipid acids through urea inclusion. The condition of urea inclusion includes the ratio of lipid acid esters: urea: solvent (w/w/w) is 1: (0.6-4): (2-10), with the temperature of 0-25 DEG C and the time of 5-30 hours. The unsaturated lipid acids react for 1-12 hours under 150-300 DEG

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				C with the presence of an acid catalyst, and the product undergoes vacuum distillation to obtain monomer lipid acid ester and dimerized acid ester. The combination of the monomer lipid ester and the saturated lipid acid ester obtained through urea inclusion is the bio -diesel . The invention increases the reaction speed, shortens the reaction time, and improves the quality of the product of dimerized lipid acid ester, because a great deal of saturated lipid acid ester does not participate in the polymerization reaction.
CN101307246	CN20081017131 20080626	UNIV JINAN [CN]	C10G3/00; C11B3/00; C11C3/10	The invention discloses a method for making biological diesel oil by the association of ultrasonic waves and microwaves. The method comprises the following steps: 1. raw oil has free fatty acids removed and undergoes dehydration treatment; 2. mixed liquor of the raw oil, low carbon alcohols and catalysts are put in a reactor and undergo transesterification reaction under the simultaneous actions of the ultrasonic waves and the microwaves; and the mol ratio of the raw oil to the low carbon alcohols is between 1:1 and 1:80, and the mass ratio of the catalysts to the raw oil is between 0.1:100 and 10:100, and the reaction temperature is controlled between 25 and 80 DEG C; 3. after reaction, remained methyl alcohols are evaporated, and reaction products undergo the standing stratification to extract coarse products of the biological diesel oil on the upper layer; 4. the coarse products of the biological diesel oil are purified to obtain the biological diesel oil with high quality. The method has the advantages of high yield, fast reaction speed, short reaction time, low energy consumption, low consumption of the catalysts, low product cost and environmental protection, etc., and is suitable for commercialized production.
US2008202020	US20080148049 20080416; US20060363193 20060227; US20050656679P 20050228	UNIV MICHIGAN STATE [US]; BIOPLASTIC POLYMERS AND COMPOS [US]	C10L1/18	Fuel oxygenates comprised of fatty acid or fatty acid ester derivatives which have been reacted with ozone; a base; and a lower alkanol (1 to 8 carbon atoms) are described. The oxygenates comprise ester groups at a point of cleavage by the ozone which provide oxygen in the oxygenate.
CN101279914	CN20081106828	UNIV NANCHANG	C07C67/24;	Disclosed is a method to prepare glycerin monostearate from

Número de Publicação	Prioridade(s	Depositante	Classificação Internacional	Titulo ou Resumo
	20080430	[CN]	C07C69/30	byproducts of biodiesel . The method takes Chinese tallow kernel oil as material to react with carbinol to prepare biodiesel . The Semen Gleditsiae of the reactant liquid at the lower layer is removed through adjusting the PH value and then the reactant liquid is decolored through carbon by adjusting the PH value; then the mixture is distilled under decompressed condition to get rid of the water, thus getting 75% crude glycerin. The crude glycerin is used as material to prepare highly pure glycerin monostearate(GMSE) through group protected synthesis. The weight ratio of accompanying glycidyl A to stearic acid is 1.0-4.5:1, the reaction lasts for 1-4h and the temperature is 20-260 DEG C; the glycerin monostearate is purified through ethanol or petroleum ether. The glycerin monostearate prepared with the method is of high purity with pure white color and good brightness; the method is low in cost and has no pollution to the environment.
CN101289629	CN20081106920 20080616	UNIV NANCHANG [CN]	C10G3/00; B01J21/18; B01J27/02; C11C3/00	The invention relates to a method for making biodiesel oil through adopting biomass-based sulfonated carbon as fatty acid esterifying and triglyceride transesterification catalyst one-step method. The method is as follows: biomass raw material containing abundant lignin is crushed and dipped in dilute sulfuric acid, and then is dried and carbonized at the low temperature to obtain biomass-based sulfonated carbon with a porous structure; and the biomass-based sulfonated carbon is taken as catalyst to make fatty acid mono -alkyl ester (biodiesel oil) through base oil fatty acid esterifying and triglyceride transesterification one-step method. The method solves the problems that: the manufacturing process of biodiesel oil through the prior acid-base catalysis method is limited by the acid value of base oil; and waste water discharge is great. The catalyst, which is insensitive to the by-product moisture generated during biodiesel oil production and is easy to separate, is propitious to the purification of crude glycerol; moreover, the catalyst, with low production cost, not only can be reused, but also can be abandoned to be used as a soil improvement material.
CN101294076	CN20081106925	UNIV NANCHANG	C09K15/34;	A method for preparing an antioxidant additive of bio -diesel fuel

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	20080617	[CN]	C10L10/00	by using microwave-assisted oriented pyrolysis of biomass is characterized in that the method comprises the following steps: cracking biomass such as plant cellulose with rich lignin in the presence of an inorganic acid as the catalyst and under controlled cracking process parameters and a microwave-assisted condition, fraction-collecting the cracking products, circularly using a reducible non-condensible gas component to maximally transform the lignin to phenol residues with small molecular weight, absorbing the phenol products by a functional ionic liquid, synchronously carrying out alkyl modification, and extracting in a solvent to obtain the antioxidant additive of bio -diesel fuel with good oil solubility, strong antioxidant effect and low cost. The method can achieve the green chemical goal of completely utilizing biomass such as plant cellulose.
CN101279962	CN20081106830 20080430	UNIV NANCHANG [CN]	C07D307/62; A61P39/06	Disclosed is a method to prepare L-ascorbyl palmitate from biodiesel byproducts. The method takes Chinese vegetable tallow as material to react with methanol under the action of sulfuric acid or sodium hydroxide, then ethanol is added and the mixture is thoroughly stirred; after that the mixture is crystallized to obtain purified methyl palmitate(MP). The method prepares a new functionally characteristic antioxidant AP through VC excessive chemical synthesis technique. The method for preparing L-ascorbyl palmitate reduces large equipment used in the conventional reduced pressure distillation process, omits the procedure of washing the surplus methyl palmitate with organic solvent, reduces the variety and consumption amount of ethyl acetate, n-hexane, benzene, etc., in AP separation process and purification process, and reduces production cost.
CN101280210	CN20081106829 20080430	UNIV NANCHANG [CN]	C10G3/00; C12S3/18	Disclosed is a method of producing bio -diesel based on immobile surfactant-coated enzymes; under the effect of the catalyst immobile surfactant-coated enzymes and certain temperature, lower alcohol and animal and vegetable oils are mixed; and then the organic solvent normal hexane and water are added; the mixture is stirred for the ester interchange reaction; the upper layer is the crude product of bio -diesel and the lower layer is mainly the glycerol after the reaction; the crude product of bio -

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				diesel in the upper layer is purified to obtain the bio -diesel ; the method of producing bio -diesel based on immobile surfactant-coated enzymes has the advantages of adopting immobile surfactant-coated enzymes for the production of the bio -diesel , effective and mild reaction conditions.
CN101302448	CN20081122679 20080606	UNIV NANJING [CN]	C10L1/00; C10G3/00; C11C3/10	The invention discloses blended biodiesel , which mainly comprises cotton oil biodiesel , tung oil biodiesel and sinking fat biodiesel , wherein, the volume ratio of the cotton oil biodiesel to the tung oil biodiesel to the sinking fat biodiesel is equal to 15-35 to 10-60 to 15-35. The blended biodiesel has low cost and simple and easy operation process, is environment-friendly, integrates the advantages of various raw material biodiesel and petrochemical biodiesel , and can improve the performance of the biodiesel better.
CN101245252	CN20071020352 20070214	UNIV NANJING [CN]	C10G3/00	The invention provides a method for utilizing waste oil to produce bio -diesel , which regards waste animal and vegetable oil as raw materials, in the producing process, no water-washing is needed, and the method consists of the following steps, first, pretreatment, degumming and dewatering the waste oil, second, pre-esterification, heating the raw material after pretreatment, and stirring the material with methyl alcohol and acid catalyst for reaction, third, alcoholysis, adding methyl alcohol and organic alkali catalyst into the material after pre-esterification for heating reaction, fourth, glaciation, bio -diesel being got after separation. The method degums the waste oil so as to eliminate the influence of gummy matter towards following steps and assure the stability of the process, saponification is avoided, which can cause waste products in block, and the products can reach the main index of 0<model> diesel, the cold filter plugging point is lower than 0 DEG C, the close flash point is more than 65 DEG C, the conversion rate (utilization rate) after pretreatment can reach more than 90 percent, no water-washing is needed so as not to produce a great amount of industrial wastewater to pollute the environment and the post treatment of products is rather convenient.
WO2008105798	US20060806305P	UNIV NORTH	C10L1/18	Plant or animal oils are processed to produce a fuel that operates

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	20060630	DAKOTA [US]; SEAMES WAYNE [US]; AULICH TED [US]		at very cold temperatures and is suitable as an aviation turbine fuel, a diesel fuel, a fuel blendstock, or any fuel having a low cloud point, pour point or freeze point. The process is based on the cracking of plant or animal oils or their associated esters, known as biodiesel , to generate lighter chemical compounds that have substantially lower cloud, pour, and/or freeze points than the original oil or biodiesel . Cracked oil is processed using separation steps together with analysis to collect fractions with desired low temperature properties by removing undesirable compounds that do not possess the desired temperature properties.
CN101289630	CN20081150009 20080606	UNIV NORTHWEST SCI TECH AGRI [CN]	C10G3/00; C11B3/00; C11C3/10	The invention relates to a method for making biodiesel oil, in particular to a method for making biodiesel oil by chinaberry seed oil. The method aims to overcome the problems of the prior art including environmental pollution and low transformation efficiency, and adopts a technical proposal comprising the following: (1) a step of pretreatment, during which, dried chinaberry seed oil is extracted by solvent to realize deacidification; (2) a step of ester interchange reaction, during which, low-acid value chinaberry seed oil is taken as raw material and is added in dried methyl alcohol or dehydrated alcohol and potassium hydroxide; (3) a step of posttreatment during making biodiesel oil, during which, atmospheric distillation is carried out and then ester phase is absorbed in a stirring state, and finally, finished product biodiesel oil is obtained through drying by means of anhydrous sodium sulfate or active aluminum oxide. Compared with the prior art, the method has the advantages and effects of (1) wide applicability, (2) ideal effect, (3) high purity and (4) excellent comprehensive utilization effect.
CN101284998	CN20081018140 20080506	UNIV NORTHWESTERN [CN]	C10G3/00; C11C3/04; C12N9/20; C12P7/64	The invention discloses a technique for making biodiesel by coupling catalytic reaction and separation process. The technique concretely comprises the following: (1) a step of carrying out hydrolysis reaction to oil, which is to hydrolyze raw oil under the existence of immobilized lipase as catalyst; (2) a step of separating and purifying glycerin, which is to separate free fatty acid and glycerin obtained in hydrolysis reaction from a reaction

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				system; and (3) a step of carrying out esterification reaction to fatty acid, which is to lead fatty acid to have esterification reaction with C1-C4 low-carbon alcohol under the catalysis of the immobilized lipase so as to generate biodiesel . The technique hydrolyzes triglyceride first and then separates hydrolysis product, namely glycerin, which reduces the viscosity of reactant and improves the mass transfer of the next esterification reaction, as well as catalytic efficiency, thus the conversion rate of oil is raised. The technique is moderate in reaction conditions, simple in reaction process, easy to control and capable of recycling the immobilized lipase as well as raw material repeatedly.
JP2008280252	JP20070123232 20070508	UNIV OF SHIGA PREFECTURE [JP]	C07C67/54; C07C67/58; C07C67/60; C07C69/24; C07C69/58; C07C69/587; C10L1/02; C11B3/02	PROBLEM TO BE SOLVED: To provide a method for refining a fatty acid methyl ester (FAME) which contains its polymer formed by its oxidation. - SOLUTION: The method comprises a step of forming a thermally oxidized fatty acid methyl ester by thermally oxidizing the fatty acid methyl ester , a step of obtaining a mixed liquid by mixing the thermally oxidized fatty acid methyl ester with a nonpolar solvent, and a step of leaving the mixed liquid to stand to effect phase separation into a lower phase precipitate and an upper phase liquid followed by separating the upper phase liquid and evaporating the nonpolar solvent from the upper phase liquid. In this method, the mixed ratio of the polymerized fatty acid methyl ester in the solution formed by the oxidative deterioration of the fatty acid methyl ester may be 5-15 vol.%. - COPYRIGHT: (C)2009,JPO&INPIT
CN101230309	CN20081045156 20080111	UNIV SICHUAN [CN]	C11C3/04; C10G3/00; C11C3/10	The invention provides a method which uses palm oil to prepare biologic diesel oil and can lower the high acid value. The method uses solid super acids of SO>4<2- >/ZrO2, SO4< 2- >/TiO2, and SO4< 2- >/xZrO<2- yTiO2 as catalyst, and uses low-carbon alcohol as esterifying agent to pre-treat the high acid value palm oil, can effectively lower the acid value of the oil, and can ensure the acid vale of the obtained biologic diesel oil to easily meet the standard (less than 0.8mgKOH/g, ASTM). The catalyst used by the invention has high catalytic activity, and is reusable. The process flow is simple, the production cost is decreased, and the environmental pollution is reduced greatly.

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CN101319169	CN20081045581 20080717	UNIV SICHUAN [CN]	C11C3/04; C10G3/00; C11C3/10	The invention relates to a novel process for preparing biodiesel through natural oil which has different acid numbers and a rapid esterification/ester interchange reaction with catalysts of minute quantity at an alcohol-oil consolute temperature. The process comprises the following steps of: taking animal and vegetable oil as raw materials, adding the oil and methanol into a reaction kettle according to an alkyd mol ratio of 2 to 1-10 to 1 for rapid esterification, and adding the acid catalyst of minute quality which is 0.01-1 per mille of the weight of the oil with reaction conditions of 120-200 DEG C, 2.0-8.0Mpa, and 10-30min; after neutralization deacidification, adding refined oil and methane into a high-pressure reaction kettle according to a mol ratio of 1 to 6-1 to 20 for rapid ester interchange, and adding a base catalyst of minute quality which is 0.01-1 per mille of the weight of the refined oil with reaction conditions of 140-200 DEG C, 2.0-8.0Mpa, and 5-20min; carrying out the sedimentation or centrifuge of a reaction product, and generating a qualified biodiesel product after removing methane through upper layer liquid phase distillation. The process uses minute quantity of catalysts and does not need separation with quick reaction and simple procedure without pollution and corrosion. The process has the advantages of mild conditions, environmental protection and remarkable efficiency.
CN101298055	CN20081124127 20080613	UNIV SOUTHEAST [CN]	B01J31/06; C10G3/00	The invention relates to a catalyst for the preparation of biodiesel by animal and vegetable oils with high acid value, which is a catalyst that is prepared by mixing a mixture of a sulfate surface active agent and an inorganic acid according to a weight ratio of 5: 1 to 1:1 and applicable to preparing biodiesel by animal and vegetable oils; the mixture of the sulfate surface active agent consists of polyethylene glycol, fatty acid polyglycol ester and sulfating fatty acid polyglycol ester, wherein, the weight ratio of the polyethylene glycol, the fatty acid polyglycol ester and the sulfating fatty acid polyglycol ester is 1:5-10: 7-10. The inorganic acid is the mixture of one or more of sulphuric acid, hydrochloric acid and phosphoric acid.
CN101314131	CN20081022322	UNIV SOUTHEAST	B01J27/138;	The invention discloses a method for preparing a modified

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	20080709	[CN]	C10G3/00	hydrotalcite solid base catalyst of biodiesel . The method comprises the following steps that: hydrotalcite or a hydrotalcite-like compound is calcined for 3 to 5 hours at a temperature of between 400 and 800 DEG C, and then is mixed with at least one of KF, CaF2, ZnF2, and NaF crystals according to the mass proportion between 5 and 100 percent to be ground to particle-free sense, and then the mixture is dried and crushed into solid base catalyst powder. The solid base catalyst powder is added with adhesive, is molded, and then is calcined to remove the adhesive to form a performed solid base catalyst. The performed solid base catalyst is placed in water vapor and is recovered for 10 minutes to 10 hours, so that a hydrotalcite layered structure destroyed due to secondary calcination is restored, and finally the performed porous load type solid base catalyst with the hydrotalcite as a carrier is produced. The method for preparing the catalyst is simple, has good catalytic effect, and can be repeatedly used.
CN101314719	CN20081022323 20080709	UNIV SOUTHEAST [CN]	C10G3/00; C11C3/10	A method for catalytically preparing bio -diesel by using tandem double fixed beds and solid catalyst comprises the following steps: selecting animal or vegetable oil exceeding acid value, fatty acid or neutral oil as the raw material, pre-reacting in a bed filled with solid acid to rapidly lower the acid value of the raw material oil, and adding into a bed filled with solid base catalyst to achieve high-efficiency transesterification reaction. Accordingly, high-purity bio -diesel can be obtained by double-bed catalysis adopting the pre-reaction, double-bed catalysis and once transesterification processes and adopting parallel-flow feeding and bed pressure manner to improve mass transfer. Meanwhile, the glycerol phase in the product can be easily separated and can be purified by vacuum rectification to obtain fine glycerol with purity above 98.5 percent, thus improving the use value of the product. The method has the advantages of wide materials, environment-friendly process, efficient product utilization, low investment cost, bright industrial future, etc.
CN101302148	CN20081039421 20080624	UNIV TONGJI [CN]	C07C53/02; C07C51/00	The invention discloses a method for producing methanoic acid by glycerol to hydrothermally reduce CO2, which relates to a

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				process that the glycerol is also transformed into lactic acid when the glycerol is utilized to reduce CO2 into the methanoic acid. Firstly, according to the mass proportion of 1 to (1-10) to (1-10), the glycerol, NaOH (or KOH) as well as CO2 are added into a hydro-thermal reactor, and then react for 20 to 300 minutes at a temperature of between 150 and 400 DEG C under the pressure of between 2 and 15Mpa to produce sodium (potassium) lactate and sodium (potassium) formate solution, and the solution is cooled to the room temperature to produce the sodium (potassium) lactate and sodium (potassium) formate crystals; then hydrochloric acid is used to neutralize the crystals to produce mixed solution of the methanoic acid and the lactic acid, and finally the mixed solution is subjected to the reduced pressure distillation and is separated according to different boiling points of the lactic acid and the methanoic acid to produce the lactic acid and the methanoic acid. Or the prior esterification separation technology is used to esterify the neutralized lactic acid and methanoic acid, and the reduced pressure distillation and the separation are performed according to the different boiling points to produce the lactic acid and the methanoic acid. In the invention, the glycerol can be byproduct glycerol of biodiesel , CO2 can be CO2 discharged by combustion, and the method has simple process, no secondary pollution, and valuable economic and social benefits.
CN101255451	CN20081102824 20080327	UNIV TSINGHUA [CN]	C12P7/56	The invention is a method for producing lactic acid for a substrate by glycerin, belonging to the field of biochemical technology. The method comprises the steps that: strains containing glycerin use genes and lactic acid synthetic genes are inoculated to a glycerin-containing seed culture medium; seed liquid is added to an initial fermentation medium containing 30-80g/L glycerin for anaerobic fermentation or micro-aerobic fermentation under 37 DEG C to 55 DEG C; the pH value is adjusted by fed batch 3-4M aqueous slkali or portion-wise addition of solid CaCO<3>, when the production strength of the lactic acid is less than 0.3-0.5g/(1h); the glycerin is stopped fed batching, the fermentation is continued until the residual glycerin concentration decreased to 5g/L. The method has the advantages that: the by product

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				glycerin in the biodiesel production process is reasonably used, and transferred to high-added-value lactic acid; the method can also be used for coupling production of biodiesel and lactic acid, by which high-added-value biodiesel and lactic acid are produced with low-cost raw material, the utilization rate of raw material is improved, and the production cost is lowered.
CN101280328	CN20081112998 20080527	UNIV TSINGHUA [CN]	C12P7/64; C10G3/00; C11C3/10; C12N1/12	The invention discloses a method for producing biological diesel oil by two steps of culture of chlorellas, namely, autotrophy and heterotrophy, which belongs to the renewable biological energy field. Concentrated autotrophic algae is put into a fermentation tank to perform heterotrophic growth from the processes of autotrophic culture, cell concentration and fermentation pollution controlling of the chlorellas, to ensure the chlorellas to be synthesized into neutral fat. Effective feeding strategy is established to ensure the fat to be synthesized into optimal after the optimization of the fermentation conditions and the process control. The biomass can reach 108g.L-1, and the grease content can reach 52 percent of cell dry weight. After the culturing is finished, biological diesel oil can be prepared after extracting algal oil and transesterification reaction. The cell concentration technology adopted by the invention can effectively avoid the problem of light restriction during the high density culture process Not only is the carbon dioxide emission reduced, but also the organic carbon source consumption is reduced, thus the preparation cost of the biological diesel oil material is saved. The whole technical line is environmental friendly, high efficient, and can meet the industrial application requirements of the microalgae biological diesel oil.
CN101307342	CN20081115376 20080623	UNIV TSINGHUA [CN]	C12P7/64; C10G3/00	The invention relates to a method for making biodiesel oil through cultivating microorganism cell by cheap substrate so as to catalyzing grease raw material, belonging to the biological grease synthesis field. The method adopts the following process that: 5g/L to 300g/L soya flour, bean pulp, corn steep liquor or soybean flour substrate is taken as a culture medium nitrogen source; the nitrogen source is combined with other carbon sources or inorganic salts so as to cultivate microorganism cell;

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				then, the cultivated whole-cell biocatalyst is used to convert regenerable grease to make biodiesel oil under the following conditions that: short chain alcohol and grease and microorganism cell occupying 2 to 30 percent of the mass of grease or free fatty acid are added in a biochemical reactor so as to be mixed evenly; then, the mixture is heated to a temperature of between 30 and 60 DEG C and undergoes reaction for 10 to 48 hours; moreover, the yield of biodiesel oil is more than 90 percent. The method has the advantage that: the method effectively reduces the cultivation cost of whole cell catalyst.
CN101230364	CN20081100871 20080225	UNIV TSINGHUA [CN]	C12P7/64; C10G3/00; C12S3/00	The invention discloses a method of producing bio -diesel by fermenting the heterotrophic chlorella in high density which belongs to the renewable biological energy field. The method uses the heterotrophic chlorella fermented in high density in the bio-reactor as a raw material, which screens the chlorella species having high growth rate and high oil content, directly inoculates into the bottle as the first-class germ to culture then transfers to the fermentation cylinder to undergo the second-glass high density fermentation; the reaction condition is then optimized, and the process is controlled; the culture containing the carbohydrate is dripped to provide the nutrition for the cell growth, therefore the heterotrophic chlorella cells cultured in high density with density of 108g/L and oil content of 61 percent are separated, collected and dried; the algae oil is extracted, and the bio -diesel is produced by transesterification reaction; the invention reduces the cost for the raw material of bio -diesel , and satisfies the demand of industrialized application of producing bio -diesel by heterotrophic chlorella cells, therefore the technique of the invention becomes an economical and effective way of making oils from bio -diesel materials.
CN101250424	CN20081103127 20080331	UNIV TSINGHUA [CN]	C10G3/00; C12S3/18	The invention relates to an enzyme method technology for improving biological diesel oil yield through replenishing chain alcohol in organic medium, which belongs to the biological diesel oil synthesis field. Short chain alcohol and oil whose molar ratio of methanol to oil is 3:1-10:1 are reacted in any biochemical reactors which are suitable for enzyme reaction on the basis of

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				tert-butanol which is 20-200% of the volume of oil and lipase which occupies 2-20% of oil quality, wherein the temperature is controlled between 30 DEG C to 65 DEG C, when biological diesel oil yield rate reaches 60-96%, short chain alcohol such as carbinol or alcohol whose molar ratio of methanol to oil is 3:1-10:1 is replenished in the above reaction system, namely mole ratio of short chain alcohol and initial oil which are added is 3:1-10:1, the short chain alcohol can be added in the model of one time replenishment and several times replenishment, which continuously reacts for 3-10 hours, oil raw material which can be conversed can nearly and completely be conversed to be biological diesel oil. The reaction can go on intermittently or continuously, lipase can be a single lipase, and can be the combinations of lipases with different performance. The enzyme method technology has the advantages that the enzyme method technology is convenient to be operated in industry, which obviously saves investment and energy consumption.
CN101327437	CN20081150411 20080722	UNIV XI AN JIAOTONG [CN]	B01J27/02; B01J27/055; C10G3/00	The present invention discloses a microwave-absorbing type solid acid catalyst and an application thereof in preparing for biodiesel . Active carbon with strong microwave absorption capability and low price is used as a catalyst support to be pretreated and then to be respectively dipped into solution consisting of Bronsted acid active component, such as sulphuric acid, sodium bisulfate, and the like, in certain concentration, to be heated and stirred under certain temperature for a plurality of hours; water is removed by drying in vacuum, and the microwave-absorbing type solid acid catalyst. A microwave reaction device is used to describe the performance test and the application of the catalyst in biodiesel synthesis reaction, a result shows that the catalyst of the present invention not only shows the broad spectrum applicable characteristics of various kinds of raw materials (castor oil, soybean oil, cottonseed oil, methanol and ethanol) but also can be used in low grade raw material oil containing free fatty acid and containing micro quantity of water. At the same time, as the catalyst has strong microwave absorption capability, compared with regular solid acid catalyst, such as SO4<2minus>/ZrO2, the reaction activity of the catalyst

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				under microwave condition is increased obviously.
WO2008090987	JP20070015342 20070125	UNIV YAMAGUCHI [JP]; UBE MATERIAL IND LTD [JP]; FUKUNAGA KIMITOSHI [JP]; NISHIDA AKIKO [JP]; MISUMI OSAMU [JP]; WATANABE TAKAYUKI [JP]	C11C3/10	Disclosed is a method for producing a fatty acid alkyl ester by utilizing the transesterification of an oil-and-fat with an aliphatic alcohol in the presence of a small quantity of a catalyst at a temperature around or lower than the boiling point of the aliphatic alcohol used for the production of the fatty acid alkyl ester , which can produce the fatty acid alkyl ester in high yield in spite of conducting the transesterification for a short period. Specifically disclosed is a method for producing a fatty acid alkyl ester , which comprises the step of reacting an oil-and-fat with an aliphatic alcohol represented by the formula: ROH [wherein R represents an alkyl group having 1 to 6 carbon atoms] in the presence of calcium oxide having a BET specific surface area of 20 m<2>/g or more and a total pore volume of pores each having a particle diameter of 2 to 100 nm of 0.15 mL/g or more.
WO2008122790	GB20070006750 20070405; GB20070007287 20070417	UNIV YORK [GB]; GRAHAM IAN [GB]; LARSON TONY [GB]; LEE ADAM [GB]; NARASIMHARAO KATABATHINI [GB]; WILSON KAREN [GB]	C10L1/02; B01J27/186; C11C3/00	There is described a method of manufacturing biodiesel which comprises the esterification, transesterification or the substantially simultaneous esterification and transesterification of a feedstock comprising one or more vegetable oils, animal fats and/or mixtures thereof. There is also described a method for the manufacture and analysis of a biodiesel comprising applying the esterified, transesterified feedstock into a column wherein said column comprises a separation material of a lipophilic polymer.
CN101255348	CN20081060548 20080327	UNIV ZHEJIANG [CN]	C10G3/00; C12M1/40	The invention discloses a biological preparation by immobilized lipase-alcohol permeable membrane biological reactor. The process is that lipase is immobilized on surface of alcohol permeable membrane made of hollow fiber by physical absorption, membrane member of immobilized lipase is prepared, then assembled into enzyme-membrane reactor. Oil passes through shell side of membrane member, and low carbon alcohol passes through tube pass of the same, then fatifies them into biological diesel under catalysis of immobilized lipase. Low carbon alcohol selectively permeates hollow fibers to provide low carbon alcohol needed in preparation of biological diesel, so that inhibitory action towards enzyme activity caused by bottom articles is effectively avoided, and biological diesel is efficiently

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				prepared. Moreover, solvent washing and batchwise charging is avoided, which meets the need of green chemistry, and reduces cost, simplify process, realizes continuous production.
CN101265413	CN20081060549 20080327	UNIV ZHEJIANG [CN]	C10G3/00; C12M1/40	The invention discloses a method for preparing biodiesel through an immobilized lipase-porous membrane bioreactor. The hollow fiber porous membrane modules of immobilized lipase are assembled into an enzyme-membrane bioreactor, the admixture of grease and lower alcohol passes through the shell pass of the membrane modules, water passes through the tube pass of the membrane modules, after the grease and the lower alcohol are circularly reacted for a period of time under the catalytic action of the immobilized lipase, the grease and the lower alcohol can be transformed into the biodiesel . Because the method of the invention adopts the lipase-porous membrane as the medium between the grease phrase and the water phase, not only the on line byproduct glycerol separating can be performed, but also necessary water can be actively supplied to the immobilized lipase, therefore high enzyme activity and stability can be maintained, and biodiesel can be efficiently prepared, simultaneously solvent cleaning and batch charging are avoided, and the method has the advantages that the technology is simple, the continuous operation can be performed, the cost is lower, and the method meet the green chemical development trend.
CN101255347	CN20081060314 20080403	UNIV ZHEJIANG [CN]	C10G3/00; C12M1/40	The invention discloses a preparation of biological diesel by actively providing water to lipase using selective water permeable membrane to keep activity of enzyme. The process is that selective water permeable membrane member of immobilized lipase is communicated with enzyme-membrane bioreactor, oil and low carbon alcoholic mixture passes through shell side of the membrane member, water passes through tube pass of the membrane member, required water for immobilizing lipase is maintained by water permeating membrane, and meanwhile oil is converted into diesel under catalysis of immobilized lipase. The inventive process can actively maintain required water for immobilizing lipase, and on-line inhibit absorption of product

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				glycerol on enzyme surface, so that activity of immobilized lipase if effectively improve, and biological diesel is efficiently prepared. Moreover, solvent washing and batchwise charging is avoided, which meets the need of green chemistry, and reduces cost, simplify process, realizes continuous production.
CN101235351	CN20081059776 20080227	UNIV ZHEJIANG [CN]	C12M1/40; C10G3/00; C12N11/02	The invention relates to an immobilized enzyme membrane reactor and the preparation thereof and a method for producing bio -diesel . The method comprises filling superfine fiber complex film in a die whose inside and outside are double cylindrical shape to form a film reactor, injecting activating agent solution and lipase solution in the film reactor in turn through adopting a cross-flow filtration mode, leading lipase to be chemically fixed on superfine fiber membrane surface, getting an enzyme membrane reactor which is fixed with lipase, respectively injecting mixed solution of animal and vegetable oil and carbinol in the inner side and the outer side of the superfine fiber complex film, doing catalytic alcoholysis reaction on fiber membrane surface, and producing bio -diesel . The enzyme gathering catalysis of the method of the invention is integral with a membrane separation process, and the method of the invention simplifies manufacturing technique, and meanwhile, the method of the invention overcomes inhabitation of lower alcohol to enzymatic activity in the process of catalyzing, the immobilized enzyme membrane reactor can be repeatedly used, which can achieve continuous production, improves production efficiency, and has excellent industrial application prospect.
CZ20070267	CZ20070000267 20070416	UNIVERZITA PARDUBICE [CZ]	C10L1/02	Process for preparing biodiesel from vegetable oils, particularly from rapeseed oil
WO2008080093	US20060877068P 20061221; US20070892823P 20070302	VERENIUM CORP [US]; SYNGENTA PARTICIPATIONS AG [CH];	C12N9/32; A01H1/00; A01K67/027; A21D2/00; A61K38/47; C07H21/04; C12C11/00; C12N1/00;	In one aspect, the invention is directed to polypeptides having an amylase and/or glucoamylase activity, polynucleotides encoding the polypeptides, and methods for making and using these polynucleotides and polypeptides. In one aspect, the polypeptides of the invention can be used as amylases, for example, alpha amylases, to catalyze the hydrolysis of polysaccharide, oligosaccharide or starch into sugars. In one aspect, the invention provides delayed release compositions

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			C12N1/20; C12N5/06; C12N15/00; C12N15/86; C12P19/04; C12P21/06; C12P21/08; C12Q1/68	comprising an desired ingredient coated by a latex polymer coating. In alternative embodiments, enzymes are used to make biofuels, e.g., ethanol, butanol, propanol, or a gasoline-ethanol mix, including a bioethanol, biopropanol, biobutanol, or a biodiesel , or for any form of fuel or biomass processing.
WO2008143679	US20060810483P 20060601	VERENIUM CORP [US]; UNIV CALIFORNIA [US]; CALIFORNIA INST OF TECHN [US]	C12N9/24	The invention provides polypeptides, including enzymes, structural proteins and binding proteins, polynucleotides encoding these polypeptides, and methods of making and using these polynucleotides and polypeptides. Polypeptides, including enzymes and antibodies, and nucleic acids of the invention can be used in industrial, experimental, food and feed processing, nutritional and pharmaceutical applications, e.g., for food and feed supplements, colorants, neutraceuticals, cosmetic and pharmaceutical needs. Polypeptides of the invention can be used in food processing, brewing, bath additives, alcohol production, peptide synthesis, enantioselectivity, hide preparation in the leather industry, waste management and animal degradation, silver recovery in the photographic industry, medical treatment, silk degumming, biofilm degradation, biomass conversion to a biofuel (e.g., a bioethanol, biomethanol, biopropanol or biobutanol, a biodiesel , etc.), biodefense, antimicrobial agents and disinfectants, personal care and cosmetics, biotech reagents, in corn wet milling and pharmaceuticals such as digestive aids and anti-inflammatory (anti-phlogistic) agents.
CN101333449	CN20071028849 20070627	WEIJI LI [CN]	C10G3/00	The invention relates to a process for preparing bio -diesel oil. The process for preparing bio -diesel oil of the invention takes animal and vegetable oil (which can be crudely purified waste oil and hogwash oil), non-standard mineral oil (which can be taken from diesel oil refined from 180cSt heavy oil in small-scale refineries), etc. as major raw materials, and uses new reactant (petroleum ether, etc.) for conversion under low temperature conditions, and the conversion of one reaction reaches 100 percent; the adding of new combustion improver increases the

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				oxygen content of products, makes the combustion more complete, and further reduces the discharge of tail gas SO2; the product performance and quality are more stable and reliable due to the added antioxidant; the requirements on reaction equipment are low, and the technique is simple; the production process is completed under normal pressure and avoids production conditions of high temperature and high pressure, thereby further improving the production safety and also reducing the production cost; and waste water, waste residues and toxic gases will not be produced in the production process, and the environment will not be polluted.
WO2008080391	DE200610062417 20061230	WIEDNER HANS [DE]; GREIF DIETER [DE]	C07C67/03; C07C67/08; C10L1/02; C11C1/08; C11C3/00	The invention relates to a method for converting used oils and used fats of biogenic origin, comprising fatty acids, into biodiesel (fatty acid methyl ester). The aim of the invention is to create a method enabling the production of a biodiesel fuel from used oils and used fats of biogenic origin utilizing a few simple process steps. In particular, the free fatty acids present are to be transferred into fatty acid methyl ester . The aim is achieved in that the free fatty acids (2) present in the used oil/used fat mixture (1) are activated and thus can be converted into fatty acid methyl ester (6) by means of subsequent esterification with methanol (5). Various carboxylic acid chlorides (3) are utilized as the activating agents. The field of application of the invention is the production of fuel and raw material.
US2008299633	US20080192815 20080815; US20080014090 20080114; US20070934768 20071103	WISE LANDFILL RECYCLING MINING, INC. [US]	C12P7/10	A cellulosic ethanol production process. An implementation of a process for producing fuel ethanol and biodiesel from cellulose may include: providing a raw cellulose stream by mixing a waste cellulose stream and an algae cellulose stream, hydrolyzing the raw cellulose stream to form a hydrolyzed cellulose stream, liquefying the hydrolyzed cellulose stream to produce a formed sugars stream and one or more liquefaction byproduct streams, fermenting the formed sugars stream to produce a raw ethanol stream by reacting the sugars stream with a yeast feed in at least one fermenter, separating the raw ethanol stream to form a fuel ethanol stream, producing an algae stream by reacting at least one of the one or more liquefaction byproduct streams with algae

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				in at least one algae bioreactor, and reacting the algae stream in at least one biodiesel reactor to produce the algae cellulose stream and a biodiesel stream.
CN101245007	CN20081047063 20080313	WUHAN INST OF TECHNOLOGY [CN]	C07C69/58; C07C67/03; C07C67/307	The invention relates to a preparation method of a stable iodized plant oil fatty acid ethyl ester , which firstly puts the plant oil into ester exchange reaction with alcohol with the effect of salt catalyst so as to produce plant oil fatty acid ethyl ester which is then put into addition reaction with hydrogen iodide to produce the iodized plant oil fatty acid ethyl ester , then heating and air ventilating methods are used for eliminating unstable iodine being combined in the iodized plant oil fatty acid ethyl ester , and lopsidedness sodium sulfite solution is used for liquid seal of the separated free iodine so as to obtain the iodized plant oil fatty acid ethyl ester with good stability; the preparation method is characterized by small viscosity, good stability and low cost.
CN101245002	CN20081047064 20080313	WUHAN INST OF TECHNOLOGY [CN]	C07C69/003; A61K31/21; A61K49/04; A61P5/14; C07C67/03; C07C67/307; C07C69/52; C07C69/58	The invention relates to a method for preparing stable iodized vegetable oil and iodized vegetable oil fatty acid ethyl ester , which includes the following steps: first, vegetable oil and iodized hydrogen gas are caused to take addition reaction so as to generate iodized vegetable oil; then, the unstably combined iodine in iodized vegetable oil is removed by heating and ventilating air method, and the removed free iodine is eliminated by using lopsidedness sulfite solution liquid sealing, thus getting the iodized vegetable oil with good stability; the stable iodized vegetable oil and ethanol are caused to take transesterification reaction under the effect of salt catalyst so as to generate the stable iodized vegetable oil fatty acid ethyl ester . The product prepared by the method for preparing stable iodized vegetable oil and iodized vegetable oil fatty acid ethyl ester has the advantages of low viscosity, good stability and low cost.
CN101225324	CN20081020577 20080129	WUXI SCIENT RES & DESIGN I OF [CN]	C10G3/00; C11C3/04	The invention relates to a preparation method of biodiesel from low acid catalyzing lard or fatty acid, belonging to technical field of biodiesel preparation method from lard or fatty acid in separate sources and classes. The preparation method utilizes the lard or fatty acid in separate sources and classes to further react with methanol under low acid catalysis to obtain methyl fatty acid ester

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				, namely the biodiesel . The dosage of the catalyst sulfate is only 1 to 2 percent of the lard or fatty acid. The preparation method of biodiesel from low acid catalyzing lard or fatty acid has the advantages of wide range of the materials, low additive quantity of the acid, short reaction time, low energy consumption, high conversion rate of the products, simple technique, low pollution of the three wastes and low production cost. Further, the biodiesel adopts the reaction under pressure.
CN101230320	CN20071035224 20070627	XIANG TAN UNIVERSITY [CN]	C12N1/18; C12P7/64	The invention discloses a microbial strain which can produce biologic diesel oil by catalyzing vegetable oil, which is bread yeast (Saccharomyces cerevisiae)DX213 CCTCC NO: M 207082, and produce biologic diesel oil by making the microbe into fixed bread yeast as the catalyst. The invention has the following advantages that 1,the price of the lipase cell is low, the fixing process is simple, the fixed yeast cell has certain toxin immunity in the system of exchanging methanol with eater, the catalysis effect is excellent, and the microbial strain is reusable; 2, the fixed lipase cell, which is prepared by using hydrotalcite, quasi hydrotalcite, nano calcium carbonate, gamma-Al2O3, and other loaders as carriers, has excellent flexibility; has strong resistance on temperature and pH value; has high mechanical strength, stable enzymatic activity and long half-life; 3 the carrier of the hydrotalcite, quasi hydrotalcite, nano calcium carbonate, gamma-Al2O3 of the fixed lipase cell can be reused after being calcined; 4 the fixed lipase cell cooperates with ultrasonic catalysis to be prepared biologic diesel oil, the process is simple, the condition is moderate, the reaction time is short, the circumstance is friendly, three wastes cannot be produced, and glycerin can be separated easily.
CN101263774	CN20071086530 20070313	XIANLIANG ZHONG [CN]	A01G15/00	The invention relates to a system engineering that can effectively prevent global warming and gradually recover the vegetation in desertification areas. The invention is characterized in that, the invention utilizes solar energy, wind energy and biologic energy to replace fossil fuel to realize the emission reduction of most CO2; by raising ruminants in captivity or semi- captivity, replacing rice by early rice and adopting a wind-proof safe coal mining and

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				gas production method, CH4 is collected and utilized; biological fertilizer is replaced by chemical nitrogen fertilizer to reduce the N2O produced in soil; therefore, the emission of greenhouse gas is reduced from source. The system engineering that can effectively prevent global warming and gradually recover the vegetation in desertification areas has the advantages that, by providing the optimum conditions for plant growth, high efficient photosynthesis of plants is promoted; the climate of desert area is improved and vegetation is recovered, therefore a large amount of CO2 is consumed or fixed, and the concentration of CO2 in the atmosphere is reduced; solar energy is the sole energy for room and courtyard environment and field greenhouses; turbulent is produced by solar energy and wind energy to control desertification; low price biodiesel and bio-ethanol are supplied to transportation, thermal power plants and other departments utilizing fossil fuel at present, and the emission reduction of 90% CO2 is realized.
CN201106041Y	CN20072126736U 20070726	XIAOLING ZHAN [CN]	C10G3/00; C10L1/02	The utility model discloses a device used for synthesizing biodiesel and alcohol radical fuel by one step at the normal temperature and the normal pressure. The device essentially consists of a synthesis kettle, a separator, a dry washing kettle, a refining kettle, a reaction kettle, a measuring groove and a filter, wherein, the measure groove for grease, methanol and catalyst is arranged above the synthesis kettle; a static mixer is arranged in the kettle and the bottom of the kettle is connected with the separator. Materials enter the synthesis kettle from the measuring groove for the one step synthesis at the normal temperature and the normal pressure and the biodiesel meeting the USA standards and the Chinese standards is then obtained after the separation through the separator and the refining through the dry washing kettle and the refining kettle; glycerin is completely converted into the alcohol radical fuel reaching the national standard in the reaction kettle. The device can run with a single kettle intermittently or with a plurality of kettles in series for continuous production. The static mixer in the synthesis kettle has the capacity to highly refine the materials instantly and can synthesize the oil of pig, cattle or sheep and palm oil into the

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				biodiesel by one step at the normal temperature and the normal pressure in a time as short as ten minutes.
CN101215482	CN20081010149 20080118	XIMING SUN [CN]	C10L1/04; C10L10/12	The invention relates to the technical field of liquid fuel and in particular is the liquid fuel which is used for hydrocarbon alcohol oil engines and a process for preparation, each component weight percentage in the product is that: alcohol whose purity is more than 98% accounts for 10-20%, heavy hydrocarbon or reducing top oil accounts for 60-80%, vegetable oil accounts for 5-6%, functional additive accounts for 0.5-5%, octanol accounts for 3-5%, and fatty acid methyl ester accounts for 3-5%. The process for preparation comprises following steps: firstly, adding the alcohol 10-20% into the octanol 3-5% under the condition of 0-20 DEG C, mixed-stirring for 10 minutes, and sealing for use, secondly, mixed-stirring the heavy hydrocarbon or the reducing top oil 60-80% with the vegetable oil 5-6% for 10 minutes and sealing for use, thirdly, mixing the mixture which is obtained from the first step and the second step, adding the fatty acid methyl ester 3-5%, mixing 10 minutes, then, adding the functional additive 0.5-5%, stirring for 10 minutes, then, sealing for 24 hours, and obtaining the product of the invention. The product of the invention has wide raw materials, low price, good environmental friendly performance after burning, very safe storage, transportation and use, simple process for preparation, few using equipment and can save cost.
CN101230288	CN20071006017 20070124	XINJIANG XIELI NEW ENERGY CO L [CN]	C10G3/00	The invention discloses a production method of biological diesel oil, which takes oil feet acidified oil of vegetable oil, animal fat, drain oil and restaurant waste oil as material; and contains four steps of grease no-catalysis high-pressure hydrolysis, fatty acid gas-phase esterification, neutralization dealcoholization and washing, fatty acid methyl ester high-vacuum continuous distillation, etc. The production method of the invention has the advantages that the reaction time is short, the raw material conversion rate is high, the production cost is low, and the product quality is high; therefore the invention is applicable for industrial production.
CN101245253	CN20071037601	YINGHUA LI [CN]	C10G3/00	The invention discloses a bio -diesel and the preparation method,

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	20070215			which comprises the following steps, first, raw materials like oil, methyl alcohol and sodium formate are stirred together for reaction, a reaction product of crude methyl ester is gathered, the oil comprises one or more of acidic oil in an edible oil producing factory, foot oil, hogwash oil in an animal butchery, restaurants and food manufacturers and sewerage oil, second, boric acid is added into the gathered crude methyl ester for vacuum distillation to get target products, bio -diesel . The bio -diesel produced through the method is the fuel prepared by waste materials, which can be in combined use with OWM tripropellant and further improve the quality of OWM tripropellant and reduce the exhaust amount of harmful gas, the products can also be put into light diesel oil, which can reach the same effect or be used separately, and the products can completely replace light diesel oil and be much better than light diesel oil, which is real green diesel oil, the method provided by the invention is characterized by no exhaust of waste water, waste gas and waste liquor, no environmental pollution and filter materials being regarded as biofertilizer.
GB2450081	GB20070011063 20070611	YOUNG ALAN [GB]	C02F1/14; B01D1/00; B01D3/00	A solar seawater distillation machine has a main heating chamber K containing a shallow layer of seawater. A plurality of lenses C are provided in a top layer for concentrating, focusing and directing the sun's rays onto an element H, the lower part of which is submerged in the water to conduct the heat to the water and create vapour. A fan S is provided to assist the transportation of the vapour to a condensing location. Preferably the lenses are sphere shaped and rotatable in order to track the position of the sun; further they may be moved to high or low positions by use of a hydraulic housing unit Q. Pre-heating tanks T may be used comprising lenses housed in a top layer directing sun's rays to heat absorbing circulation pipes which deliver heated water to the main tank. Additionally a biodiesel water boiler may be provided before the first pre-heating tank. Pipes distributing hot water vapour to the condensing locations may be provided with magnified solar heat boosters attached at intervals to keep the vapour hot and prevent condensation in the pipes.
CN101285000	CN20081058474	YUNNAN BAIRUITE	C10G3/00;	The invention discloses a method of using acer truncatum oil as

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	20080530	BIOLOG DEV CO [CN]	B01J21/06; B01J27/04; C07C57/03; C11C3/10	raw material to make biodiesel and nervonic acid. The method comprises the following steps that: acer truncatum oil is mixed well with methanol or ethanol; solid superacid catalyst is added in to carry out transesterification; mixed products of transesterification are filtered after complete reaction to separate catalyst out; mixed fatty acid methyl ester or ethyl ester and glycerol phase are centrifugally separated; the mixed fatty acid methyl ester or ethyl ester is distilled to remove methanol or ethanol and then distilled again to obtain the fatty acid methyl ester or ethyl ester with low boiling point, namely the needed biodiesel ; liquid at reactor bottom is distilled further, and the high boiling point part is accumulated to obtain nervonic acid methyl ester or ethyl ester; the needed nervonic acid can be obtained through hydrolysis, separation and crystallization. The method obtains two products through one-time feeding, has simple production process and convenient post-treatment process, produces no wastewater, can use the solid superacid catalyst repeatedly, greatly reduces the production cost of biodiesel , and increases the comprehensive utilization benefit of acer truncatum oil.
CN101260310	CN20071037836 20070306	ZHANG JUN [CN]	C10G3/00	The invention provides a method to produce bio -diesel by direct using fruit and seeds of oil plants, wherein the smashed fruit and seeds of the oil plants are mixed with calcium oxide, methanol (or ethanol), and emulsifying reagent to undergo a shearing reaction in an ester-exchange reactor, then the reactant after the reaction enters in a centrifugal machine, the separated rough ester A(B) lipid acid is distilled to obtain the bio -diesel . The invention also provides a device to produce bio -diesel by direct using fruit and seeds of oil plants, which comprises a plurality of material storage cans, a mixing can connected with the storage cans, an ester-exchange reactor connected with pipes of the mixing can, a centrifugal machine connected with pipes of the ester-exchange reactor, and a plurality of distillation towers and drying machines connected with the centrifugal machine, wherein the ester-exchange reactor comprises two shearing machines and two static mixer connected together with pipes, which are in staggered arrangement through two tee joints. The method and

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				the device to produce bio -diesel by direct using fruit and seeds of oil plants provided by the invention has simple technology, quick reacting speed, high efficiency and low cost.
CN101245267	CN20081064176 20080326	ZHENHE LIU [CN]	C10L1/02; C10L1/18; C10L1/19; C10L1/22; C10L1/30	The invention relates to a diesel, in particular to a preparation method of methanol diesel additives and is characterized in that the preparation method takes weight parts as the unit and adds the raw materials of 25 to 30 parts of methanol, 5 to 10 parts of isobutanol, 10 to 15 parts of oleic acid, 1 part to 3 parts of fatty acid methyl ester , 1 part to 3 parts of ferrocene (de-iron), 0.1 to 0.2 part of tween 80, 0.1 to 0.3 part of span 80, 0.2 to 0.5 part of methyl tert-butyl ether, 0.1 to 0.3 part of dimethoxymethane, 1 part to 2 parts of acetone, 0.1 to 0.3 part of tert-butyl alcohol, 0.1 to 0.3 part of hexamethylene tetramine and 0.1 to 0.2 part of 102TB corrosion inhibitor into a reaction vessel and heats the materials to 50 to 55 DEG C for reaction for 30 to 45 minutes and drives the raw materials into a product tank to form the finished products. The diesel has the advantages of simple technique, convenient operation, low cost and more environment-friendly; the exhaust emission of the diesel is less than the exhaust emission of petroleum diesel by 60 to 80 percent, which reduces the air pollution to the environment; methanol fuels can be mixed and used together with petroleum fuels and engines can be directly used without modification.
CN101280271	CN20081038075 20080527	ZHIWU CAI [CN]	C12M1/36; C12M1/00; C12M1/38; C12N1/12	The invention relates to a micro-algae industrialization production device and a method of producing the micro-algae, which belong to the engineering field of the micro-algae culturing and the technical field of the environmental protection. An air-pushed type photobiology reactor unit device is an annular shallow pond built by bricks and concrete, an isolation wall with both ends opened is built in the shallow pond, a liquid drainage pipe and a liquid replacement pipe are arranged in the air-pushed type photobiology reactor unit device, an air inlet pipe is fixed on the isolation wall in the middle part of the air-pushed type photobiology reactor unit device and is connected with a plurality of L-shaped branch pipes, a plurality of micro blowholes are arranged on side walls of the transversal pipes of the branch

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				pipes, the whole air-pushed type photobiology reactor unit device is covered by agricultural film and is provided with a skylight, to form an enclosed type photobiology reactor. The device combines the individual advantage of the open type photobiology reactor and the enclosed type photobiology reactor, by adopting the industrial waste gas and the eutrophication surface water or the industrial wastewater as the main raw material to perform micro-algae culturing in a large scale, especially to culture the micro-algae with high oil percentage, to provide the large or medium sized bio -diesel factory with raw oil, and simultaneously the emission reduction of carbon dioxide and the treatment of polluted water body are realized.
CN101294097	CN20081039167 20080619	ZHIWU CAI [CN]	C10G3/00; C11C3/10	The invention relates to a multifunctional reaction kettle for producing bio -diesel and the operation method thereof. The multifunctional reaction kettle comprises a kettle body, a jacket, an axial flow impeller, a turbine impeller, a baffle, a methanol feeding pipe, a raw material oil feeding pipe, a catalyst charger, a discharging port, and an air extraction pipe. The multifunctional reaction kettle is characterized in that a main agitating device and an auxiliary agitating device are arranged in the kettle body; a main motor outside the kettle is in transmission connection with the axial flow impeller in the kettle through a main agitating shaft; an auxiliary motor outside the kettle is in transmission connection with the turbine impeller in the kettle through an auxiliary agitating shaft; the turbine impeller is started when feeding catalyst, at this time, the feeding jet flow and the radial discharge flow of the turbine impeller form an impinging jet flow to achieve rapid dispersion of the catalyst; the baffle arranged in the kettle and the methanol feeding pipe, the raw material oil feeding pipe, the catalyst feeding pipe, etc. arranged on the upper section of the kettle body can accelerate the macro-mixing and micro-dispersing speed and the entire reaction process; and the main agitating device and the auxiliary agitating device form a high-low double-impeller configuration to achieve integral strong circulation and local high shear.
US2008227993	US20070725254	ZUCKERMAN	C07C51/285;	The present invention is a method for making a class of

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	20070317	MATTHEW MARK [US]	C07C59/125	molecules synthesized from unsaturated plant oils, and the synthesized class of molecules, such that when compounded with saturated plant oils they improve the physical properties such as low temperature behavior, measured as cold filter plug point and cloud point for biodiesel fuels and pour point for oils and lubricants, as well as other physical properties including viscosity and viscosity index, so that the physical properties of the combined materials approach the physical properties of unsaturated plant oils and find use as base material feed stocks for "Green" fuel, oil, and lubricant products.

ANEXO I - Códigos dos Países

Código	País	Código	País
AR	Argentina	**IN**	Índia
AT	Áustria	**IS**	Islândia
AU	Austrália	**IT**	Itália
BE	Bélgica	**JP**	Japão
BG	Bulgária	**KR**	República Da Coréia
BR	Brasil	**LU**	Luxemburgo
BS	Bahamas	**LV**	Letônia
CA	Canadá	**MA**	Marrocos
CH	Suíça	**MD**	Republica Moldova
CN	China	**MX**	México
CZ	República Tcheca	**NL**	Holanda
DE	Alemanha	**NO**	Noruega
DK	Dinamarca	**NZ**	Nova Zelândia
DZ	Argélia	**OA**	African Intellectual Property Organization (OAPI)[1]
EA	Organização de Patentes da Eurásia (EAPO)[1]	**PH**	Filipinas
EE	Estônia	**PL**	Polônia
EG	Egito	**PT**	Portugal
EP	Organização Européia de Patentes (EPO)[1]	**RO**	Romênia
ES	Espanha	**RU**	Federação Russa
FI	Finlândia	**SE**	Suécia
FR	França	**SG**	Singapura
GB	Reino Unido	**SI**	Eslovênia
GR	Grécia	**SK**	Eslováquia
HK	Região Administrativa Especial de Hong Kong Da República Popular da China	**TR**	Turquia
HR	Croácia	**TW**	Taiwan
HU	Hungria	**UA**	Ucrânia
ID	Indonésia	**US**	Estados Unidos
IE	Irlanda	**WO**	Organização Mundial de Propriedade Intelectual (WIPO)[2]
IL	Israel	**ZA**	África do Sul

Fonte: http://www.wipo.int/export/sites/www/scit/en/standards/pdf/03-03-01.pdf, acesso em março de 08.

[1] Organização intergovernamental (escritório de patente regional) que atua para alguns países contratante sob o PCT (Tratado de Cooperação de Patentes).

[2] O código "WO" é utilizado em relação à publicação internacional sob o Tratado de Cooperação em Matéria de Patentes – PCT de pedidos internacionais depositados em qualquer repartição receptora de pedidos PCT.