

1) Family number: 31876483 (US2005112739A)

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Title: METHOD FOR PRODUCING HYDROCARBONS AND OXYGEN-CONTAINING COMPOUNDS FROM BIOMASS

Abstract: Source: US2005112739A The present invention generally relates to biochemical and chemical industry, and more particularly to a method which can be used in fermenting carbohydrate substrates of plant origin for producing C₁-C₅ alcohols, and for synthesis of higher alcohols, other oxygen-containing compounds and hydrocarbons as well as for the production of motor fuel components from biomass. Since C₆ and higher alcohols, ethers, acetals, and higher hydrocarbons are not obtainable by a direct biochemical route, it is proposed to synthesize these using known chemical reactions, wherein by-products of **fermentation** are as raw materials for said synthesis.

Classifications:

International (IPC 8-9): C07C1/24 C07C29/17 C07C45/50 C07C45/61 C07C5/03 C12P7/02 C12P7/04 C12P7/06 C12P7/10 C12P7/14 C12P7/16 C12P7/18 C12P7/20 C12P7/24 C12P7/28 C12P7/54 (Advanced/Invention);
C12P7/02 C12P7/06 C12R1/145 C12R1/865 (Advanced/Non-invention);
C12P7/02 C12P7/24 C12P7/40 (Core/Invention);
C12P (Subclass/Invention)

International (IPC 1-7): C12P7/06

CPC: Y02E50/16 C12P7/24 C12P7/54 C12P7/06 C12P7/14 C07C45/50 C12P7/04 C12P7/16 C07C45/61 C07C29/177 C07C1/24 C07C5/03 Y02E50/17 C12P7/18

European: C12P7/06 C12P7/18 C12P7/24 C12P7/54 Y02E50/17

US: 435/161 435/167

Family:

Publication number	Publication date	Application number	Application date
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UA84299 C2	20081010	UA20060004052	20041022
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Priority:

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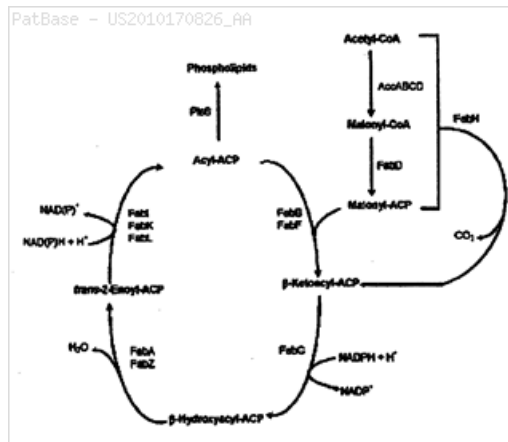
Probable Assignee: SWEDISH BIOFUELS AB

Assignee(s): (std): GOLUBKOV IGOR ; SWEDISH BIOFUELS AB ; SWEDISH BIOFUELS AB

Inventor(s): (std): GOLUBKOV IGOR ; GOLUBKOV IGOR MIKHAILOVICH ; IGOR GOLUBKOV

Agent(s): SPRUSON AND FERGUSON; MARKS AND CLERK; REINHOLD COHN AND PARTNERS; NAKAMURA GIHEI;
NODA HISATO; SAKAI MASAYUKI; HORII YUTAKA; MORITA TOSHIO; FUKAMI HISAO; BROWDY AND
NEIMARK PLLC 624 NINTH STREET NW

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK



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US: 1/1 208/106 208/106S 208/118 208/120.01 208/120.010S 208/16 208/16P 435/134 435/134P 435/134S 435/135 435/135S 435/148 435/157 435/157P 435/157S 435/166 435/166S 435/167 435/167S 435/189 435/243 435/243S 435/245 435/245S 435/252.3 435/252.300S 435/252.31 435/252.310S 435/252.32 435/252.320S 435/252.33 435/252.330S 435/252.34 435/252.340S 435/252.35 435/252.350S 435/252.8 435/254.11 435/254.110S 435/254.2 435/254.200S 435/254.21 435/254.210S 435/254.22 435/254.23 435/254.230S 435/254.3 435/254.300S 435/254.4 435/254.400S 435/254.5 435/254.500S 435/254.6 435/254.7 435/254.700S 435/254.8 435/257.2 435/257.200S 435/29 435/320.1 435/320.100S 435/325 435/325S 435/348 435/348S 435/350 435/352 435/357 435/358 435/358S 435/365 435/367 435/367S 435/369 435/41 435/419 435/419S 435/41S 44/313 44/313P 44/388 44/388P 530/350 530/350S 536/23.2 536/23.200S 536/23.7 536/23.700S 554/1 554/1S 554/224 554/224S 568/840 568/840S 568/909.5 568/909.500P 585/16 585/16S 585/20 800/13 800/13P

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Priority:

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Probable Assignee: REG LIFE SCIENCES LLC

Assignee(s): (std): BERRY DAVID ; BRUBAKER SHANE ; CHURCH GEORGE ; DA COSTA BERNARDO ; DEL CARDAYRE STEPHEN B ; LS9 INC ; FRIEDMAN LISA ; KEASLING JAY D ; HU ZHIHOU ; HU ZHIHAO ; SOMMERVILLE CHRIS ; SCHIRMER ANDREAS ; RUDE MATHEW ; VALLE FERNANDO ; SOMERVILLE CHRIS ; REG LIFE SCIENCES LLC

Assignee(s): REG LIFE SCIENCES LLC NDGES DES STAATES IOWA SOUTH SAN FRANCISCO ; REG LIFE SCIENCES LLC SOUTH SAN FRANCISCO ; KEYBANK NATIONAL ASSOCIATION ; LS9 INC100 KIMBALL WAYSOUTH SAN FRANCISCOCA94080US

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Inventor(s): CHRIS SOMMERVILLE ; DEL CARDAYRE STEPHEN BUS ; CHURCH GEORGEUS ; DEL CARDAYRE STEPHEN B COURT BELMONT ; FRIEDMAN LISA SOUTH SAN FRANCISCO ; CHURCH GEORGE SOUTH SAN FRANCISCO ; DEL CARDAYRE STEPHEN B BELMONT ; FRIEDMAN LISAUS ; KEASLING JAY DUS ; SCHIRMER ANDREASUS ; SOMERVILLE CHRISUS ; HU ZHIHAOUS ; SCHIRMER ANDREAS SOUTH SAN FRANCISCO ; HU ZHIHAO

Agent(s):

CASTRO VALLEY ; KEASLING JAY D BERKELY ; SOMERVILLE CHRIS SOUTH SAN FRANCISCO ; KEASLING JAY D BERKELEY ; HU ZHIHAO SOUTH SAN FRANCISCO ; VALLE FERNANDO SOUTH SAN FRANCISCO ; STEPHEN B DEL CARDYRE ; ZHIHOU HU ; CRIS SOMERVILLE ; DAVID BARRY ; BRUBAKER SHANEUS ; BRUBAKER SHANE SOUTH SAN FRANCISCO ; BERRY DAVIDUS ; BERRY DAVID SOUTH SAN FRANCISCO FISHER ADAMS KELLY; FISHER ADAMS KELLY PTY LTD; FISHER ADAMS KELLY CALLINANS; SPRUSON AND FERGUSON; TORYS LLP; BERESKIN AND PARR LLP SENCRL SRL; GRUENECKER PATENT U RECHTSANWALTE PARTG MBB; GRUENECKER KINKELDEY STOCKMAIR AND SCHWANHAEUSSER ANWALTSSOZIETAET; GRUENECKER KINKELDEY STOCKMAIR AND SCHWANHAEUSSER; GRUENECKER PATENT U RECHTSANWALTE PARTG MBB; MILTENYI PETER; KAWAMOTO KAZUYA; SHIMIZU HATSUSHI; OSAKABE SUGURU; LS9 INC; LINDA R; BRIGITTE A; REG LIFE SCIENCES LLC; BRIGITTE; FOLEY AND LARDNER LLP; DEGRANDIS PAULA A; SLATER STACEY C; SUPERKO COLLEEN ET AL; SONG VICTOR L

Designated states:

AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

4) Family number: 50963687 (US2013210096A)

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Title: METHODS AND SYSTEMS FOR THE PRODUCTION OF HYDROCARBON PRODUCTS

Abstract: Source: US2013210096A Methods and systems for the production of hydrocarbon products, including providing a substrate comprising CO to a bioreactor containing a culture of one or more micro-organisms; and fermenting the culture in the bioreactor to produce one or more hydrocarbon products. The substrate comprising CO is derived from an industrial process selected from the group comprising steam reforming processes, refinery processes, steam cracking processes, and reverse water gas shift processes.

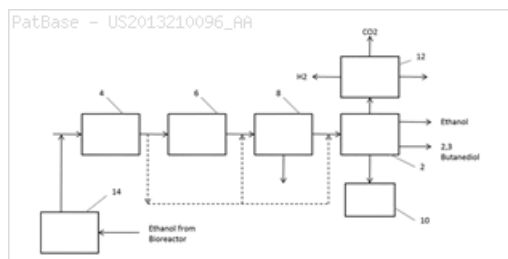
Classifications:

International (IPC 8-9): C01B3/12 C01B3/32 C01B3/38 C01B31/18 C07C1/02 C10G11/18 C10G9/36 C10K3/02 C10L1/02 C10L1/04 C12M1/00 C12M1/04 C12M1/107 C12P1/00 C12P5/00 C12P5/02 C12P7/02 C12P7/04 C12P7/06 C12P7/08 C12P7/16 C12P7/18 C12P7/40 C12P7/54 C12R1/01 C12R1/145 (Advanced/Invention); C12R1/01 C12R1/145 (Advanced/Non-invention)
CPC: C12P7/54 C12P7/06 C01B3/38 C01B2203/0233 C01B2203/0283 C01B2203/043 C01B2203/06 C01B2203/061 C01B2203/1058 C10G9/36 C10G11/18 C10G2300/1011 C10G2300/708 C10J2300/0943 C10J2300/1681 C10J2300/1846 C10K3/026 C12M21/04 C12M43/00 C12P5/02 C12P7/065 C12P7/18 Y02E50/17 Y02E50/343 Y02P20/132 Y02P20/146 Y02P30/20

European: C01B3/38 C10G11/18 C10G9/36 C12M21/04 C12M43/00 C12P5/02 C12P7/06D C12P7/18 M01B203/02B4B

M01B203/02H M01B203/04F4 M01B203/06 M01B203/06B M01B203/10D2B2 M10G300/10B

US: 435/135 435/140 435/141 435/157 435/158 435/160 435/161 435/163 435/167 435/41

**Family:**

Publication number	Publication date	Application number	Application date
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Priority:

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Probable Assignee: LANZATECH NEW ZEALAND LTD

Assignee(s): (std): LANZATECH NEW ZEALAND LTD ; OBERN JAMES ; SCHULTZ MICHAEL ; SCHULTZ MICHAEL ANTHONY ; SIMPSON SEAN ; SIMPSON SEAN DENNIS

Assignee(s): VENTURE LENDING AND LEASING VII INC ; VENTURE LENDING AND LEASING VIII INC ; LANZATECH NEW ZEALAND LIMITED

Inventor(s): (std): OBERN JAMES ; OBERN JAMES KEVIN ; SCHULTZ MICHAEL ; SCHULTZ MICHAEL ANTHONY ; SIMPSON SEAN ; SIMPSON SEAN DENNIS

Agent(s): BALDWIN'S INTELLECTUAL PROPERTY; BERESKIN AND PARR LLP SENCRL SRL; KEEN CELIA MARY; FRANK S; MOLINARO FRANK

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY

5) Family number: 41783606 (US2008131958A)

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Title: ENERGY PRODUCTION WITH HYPERTHERMOPHILIC ORGANISMS

Abstract: Source: US2008131958A The present invention relates to the field of degradation with hyperthermophilic organisms, and in particular to the use of hyperthermophilic degradation to produce heat from a biomass. In some embodiments, a biomass is fermented in the presence of hyperthermophilic organisms to produce heat. The heat is used to heat a liquid which is used directly in a heat pump or radiant heat or to produce electricity or drive a steam turbine.

Classifications:

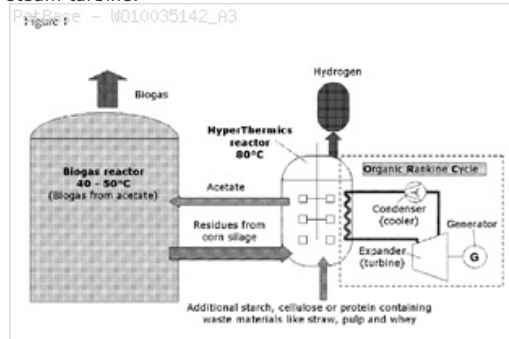
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International (IPC 1-7): C02F3/34

CPC: C02F11/04 C12M21/02 C12M21/04 C12M23/58 C12P7/04 C12P7/08 C12P7/10 C12P7/54 C12R1/01 C02F3/34 B09B3/00 B09C1/10 C02F2301/106 C12M41/18 C12M43/08 C12P3/00 C12P5/023 C12P7/065 Y02E50/16 Y02E50/17 Y02E50/343 Y02P20/129 Y02P20/136 Y02W10/33 Y02W10/37

European: C02F3/34 C12M21/02 C12M21/04 C12M23/58 C12M41/18 C12P3/00 C12P5/02B C12P7/04 C12P7/06D C12P7/08 C12P7/10 C12P7/54 C12R1/01 M02F11/04 M02F301/10D Y02E50/16 Y02E50/17 Y02E50/34B

US: 435/134 435/134P 435/136 435/136S 435/140 435/161 435/161S 435/162 435/162S 435/163 435/167 435/167S 435/168 435/168S 435/243 435/252.1 435/252.100S 435/290.1 435/290.100P 435/41 435/41S 435/471

**Family:**

Publication number	Publication date	Application number	Application date
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EP2679688 B1	20161109	EP20130179864	20090924
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IN262083 B	20140801	IN2009DN00203	20090109
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WO08053353 A2	20080508	WO2007IB03772	20070718
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Priority:

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US20090566282	20090924	US20080122573P	20081215	US20090233644P	20090813
US20080122573P	20080915				

Probable Assignee: HYPERTHERMICS HOLDING AS**Assignee(s):** (std): HYPERTHERMICS HOLDING AS ; LIFE SCIENCE NUTRITION AS ; REMMEREIT JAN ; THOMM MICHAEL ; UNIV REGENSBURG**Assignee(s):** THE UNIVERSITY OF REGENSBURG ; OF REGENSBURG UNIV**Inventor(s):** (std): JAN REMMEREIT ; MICHAEL THOMM ; REMMEREIT JAN ; THOMM MICHAEL**Agent(s):** SPRUSON AND FERGUSON ; SMART AND BIGGAR ; GOWLING LAFLEUR HENDERSON LLP ; GLAWE DELFS MOLL PARTNERSCHAFT MBB VON PATENT U RECHTSANWALTEN ; KIDD SARA JEAN ; GLAWE DELFS MOLL ; GOLDING LOUISE ANN ; MEDLEN AND CARROLL LLP ; CASIMIR JONES SC**Designated states:** AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS

6) Family number: 48202472 (US2011024288A)

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Title: DECARBOXYLATION CELL FOR PRODUCTION OF COUPLED RADICAL PRODUCTS

Abstract: Source: US2011024288A A method that produces coupled radical products from biomass. The method involves obtaining a lipid or carboxylic acid material from the biomass. This material may be a carboxylic acid, an ester of a carboxylic acid, a triglyceride of a carboxylic acid, or a metal salt of a carboxylic acid, or any other fatty acid derivative. This lipid material or carboxylic acid material is converted into an alkali metal salt. The alkali metal salt is then used in an anolyte as part of an electrolytic cell. The electrolytic cell may include an alkali ion conducting membrane (such as a NaSICON membrane). When the cell is operated, the alkali metal salt of the carboxylic acid decarboxylates and forms radicals. Such radicals are then bonded to other radicals, thereby producing a coupled radical product such as a hydrocarbon. The produced hydrocarbon may be, for example, saturated, unsaturated, branched, or unbranched, depending upon the starting material.

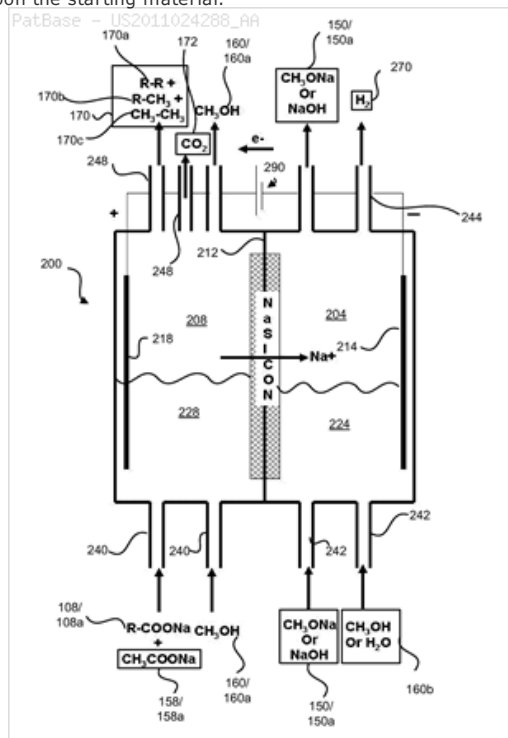
Classifications:

International (IPC 8-9): B01J19/08 B01J19/24 C07B61/00 C07C1/207 C07C1/213 C07C15/04 C07C29/32 C07C39/04 C07C6/04 C07F1/04 C10G3/00 C10G32/02 C10K3/00 C10L1/00 C10M105/06 C10M109/02 C12P7/40 C25B1/02 C25B1/04 C25B1/10 C25B1/16 C25B11/00 C25B13/02 C25B13/04 C25B15/08 C25B3/00 C25B3/02 C25B3/04 C25B3/06 C25B3/10 C25B3/12 C25B9/00 C25B9/06 C25B9/08 C25B9/10 (Advanced/Invention)

CPC: Y02E60/366 C25B3/02 C07C29/32 C07C1/2078 C07B61/00 B01J19/24 C12P7/54 C25B1/02 C07C1/24 C10M105/06 C10M109/02 C10M2203/065 C10M2205/223 C10N2270/00 C10G3/40 C10G3/45 C10G3/47 C10G3/50 C10G32/02 C10G2300/1014 C10G2300/1018 C10G2400/04 C07F1/04 C10L1/00 C25B9/00 Y02E50/343 C07C6/04 B01J19/087 C25B11/00 C25B3/12 C25B9/10 C25B1/10 C25B13/02 C07C15/04 C07C39/04 Y02E70/10 C10G3/00 C10G2300/1011 C10G2300/44 C25B3/10 C25B9/08 C25B15/08 Y02P30/20 C25B13/04 C25B3/00 C25B3/04

European: C10G3/00 C12P7/54 C25B3/10 C25B9/08 Y02E50/34B

US: 1/1 204/242 204/252 205/340 205/413 205/415 205/431 205/434 205/435 205/436 205/440 205/455 205/456 205/462 205/463 205/637 435/166 435/167 435/167P 585/240 585/240S 585/310 585/320 585/323



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MY155642 A	20151113	MY20110004930	20100721
US2011024288 AA	20110203	US20100840401	20100721

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Priority:

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Probable Assignee: CERAM INC

Assignee(s): (std): KARANJIKAR MUKUND ; JOSHI ASHOK ; CHITTA PALLAVI ; HUNT JOEL ; HUNT DAVID ; JOSHI ASHOK V ; HUNT DAVID JOEL ; BHAVARAJU SAI ; CERAM INC ; CERAMATEC INC

Assignee(s): MCGUIRE PATRICK ; MOSBY JAMES ; PENDLETON JUSTIN

Inventor(s): (std): ASHOK JOSHI ; BHAVARAJU SAI ; CHITTA PALLAVI ; HUNT DAVID ; HUNT DAVID JOEL ; HUNT JOEL ; JOEL HUNT ; JOEL HUNT DAVID ; JOSHI ASHOK ; JOSHI ASHOK V ; KARANJIKAR MUKUND ; MCGUIRE PATRICK ; MOSBY JAMES ; MOSBY JAMES M ; MUKUND KARANJIKAR ; PALLAVI CHITTA ; PENDLETON JUSTIN ; SAI BHAVARAJU ; STALEY JACOB ; TAGGART DANIEL

Agent(s): OYEN WIGGS GREEN AND MUTALA LLP; Harrison Goddard Foote; HGF LTD; OKADA KAZUHIKO; CERAMATEC INC; DAVID; PAUL S; FONDA DAVID

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

7) Family number: 20665792 (US2003077771A)

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Title: PROCESS FOR PRODUCING ETHANOL

Abstract: Source: US2003077771A A process for producing ethanol including a combination of biochemical and synthetic conversions results in high yield ethanol production with concurrent production of high value coproducts. An acetic acid intermediate is produced from carbohydrates, such as corn, using enzymatic milling and **fermentation** steps, followed by conversion of the acetic acid into ethanol using esterification and hydrogenation reactions. Coproducts can include corn oil, and high protein animal feed containing the biomass produced in the **fermentation**.

Classifications:

International (IPC 8-9): B01J31/04 C07C51/02 C07C51/15 C07C51/49 C07C51/493 C07C67/08 C07C67/54 C07C67/60 C12N1/20 C12P7/06 C12P7/08 C12P7/10 C12P7/14 C12P7/40 C12P7/54 C12P7/56

C12P7/62 (Advanced/Invention);

C07C51/42 C07C53/21 (Advanced/Non-invention);

B01J31/04 C07C51/02 C07C51/15 C07C51/42 C07C67/00 C12P7/02

C12P7/40 C12P7/62 (Core/Invention);

C07C C12P (Subclass/Invention)

International (IPC 1-7): B01J31/04 C12P7/06 C12P7/08 C12P7/10

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Y02P20/127

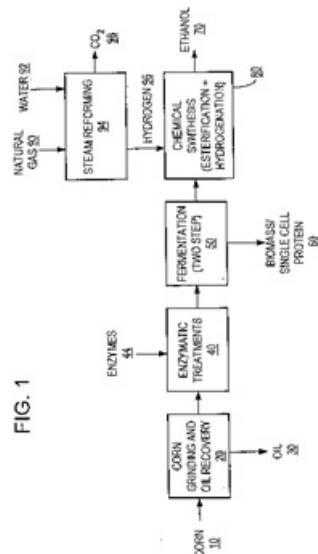
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US: 435/135 435/135P 435/139 435/140 435/155 435/157 435/161

435/161P 435/161S 435/162 435/163 435/165 435/165P 435/252.7

562/600 562/606 562/608 568/885

**Family:**

Publication number	Publication date	Application number	Application date
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Priority:

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US20110101900	20110505	US20120551136	20120717		

Probable Assignee: ZEACHEM INC

Assignee(s): (std): DAN VERSER ; EGGEMAN TIM ; EGGEMAN TIMOTHY J ; TIM EGGEMAN ; VERSER DAN ; ZEACHEM INC ; VERSER DAN W ; ZEA CHEM INC

Assignee(s): ZEACHEM INC AUS ; ZEACHEM INC GOLDEN ; VENTURE LENDING AND LEASING V INC ; VENTURE LENDING AND LEASING VI INC

Inventor(s): (std): D VERSER ; DAN VERSER ; EGGEMAN DAN VERSER TIM ; EGGEMAN T ; EGGEMAN T VERSER D ; EGGEMAN THIMOTHY J ; EGGEMAN TIM ; T EGGEMAN ; TIM EGGEMAN ; VERSER D ; VERSER DAN ; VERSER DAN W ; EGGEMAN TIMOTHY J ; ZEACHEM INC

Inventor(s): EGGEMAN TIMOTHY J LAKEWOOD ; VERSER DAN W MENLO PARK ; EGGEMAN TIMOTHY ; DAN VERSER TIM EGGEMAN

Agent(s): ALLENS ARTHUR ROBINSON; ALLENS PATENT AND TRADE MARK ATTORNEYS; ALLENS ARTHUR ROBINSON PATENT AND TRADE MARKS ATTORNEYS; PATENTANWAELTE WALLACH KOCH DR HAIBACH FELDKAMP; COATES IAN HAROLD ET AL; COATES IAN HAROLD; INSTONE ALICIA CLAIRE; ISERN JORGE; SHERIDAN ROSS PC

Designated states: AE AL AM AT AU AZ BA BB BE BF BG BJ BR BY CA CF CG CH CI CM CN CR CU CY CZ DE DK DM EE ES FI FR GA GB GD GE GH GM GN GR GW HR HU ID IE IL IN IS IT JP KE KG KP KR KZ LC LI LK LR LS LT LU LV MA MC MD MG MK ML MN MR MW MX NE NL NO NZ PL PT RO RU SD SE SG SI SK SL SN SZ TD TG TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW

8) Family number: 50963696 (US2013112576A)

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Title: CONTAINER AND DEVICE COMPRISING SUCH A CONTAINER

Abstract: Source: US2013112576A A container with a cover wall, provided with at least one cover wall region which can be pierced to form a supply opening for supplying a liquid, a bottom wall, provided with at least one bottom wall region which can be pierced to form a discharge opening, at least one first chamber, in which a basic product is present, and a second chamber, in which an adjustment element is arranged that can be displaced from a position of rest to a puncturing position opening the piercable bottom wall region. The adjustment element is provided with at least one through-channel with an inlet opening and with an outlet opening opposite the piercable bottom wall region. The adjustment element is provided with a mixing chamber for mixing the liquid and the basic product. The mixing chamber is in fluid communication with the first chamber in the puncturing position of the adjustment element.

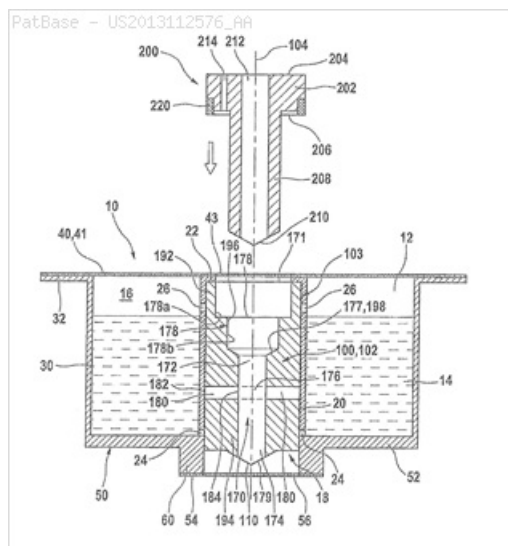
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CPC: C12M21/04 C12M43/00 Y02E50/17 C12P7/065 C12P7/54 B65D81/32 C12P7/08 C12P7/18 C07C29/1518 Y02E50/343

European: C12M21/04 C12M43/00

US: 206/222 435/140 435/158 435/163 435/289.1 435/294.1



Family:

Publication number	Publication date	Application number	Application date
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Priority:

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Probable Assignee: BRITA GMBH

Assignee(s): (std): LANZATECH NEW ZEALAND LTD ; SCHULTZ MICHAEL ; MERZ ALEXANDRA ; ZOGG DAVID ; SCHOEDLER CLAUDIO ; SCHULTZ MICHAEL ANTHONY ; BRITA GMBH ; HAGEN THOMAS ; HOTHER STEFAN

Assignee(s): LANZATECH NEW ZEALAND LIMITED ; VENTURE LENDING AND LEASING VII INC ; VENTURE LENDING AND LEASING VIII INC

Inventor(s): (std): HAGEN THOMAS ; HOTHER STEFAN ; MERZ ALEXANDRA ; SCHOEDLER CLAUDIO ; SCHULTZ MICHAEL ; SCHULTZ MICHAEL ANTHONY ; ZOGG DAVID

Agent(s): BALDWIN'S INTELLECTUAL PROPERTY; BERESKIN AND PARR LLP SENCRL SRL; MOLINARO FRANK

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

9) Family number: 45551795 (US2010154293A)

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Title: METHODS AND COMPOSITIONS RELATED TO THIOESTERASE ENZYMES

Abstract: Source: US2010154293A The present invention relates to novel mutant thioesterase enzymes and naturally-occurring equivalents thereof, compositions made from such enzymes and uses of thioesterase enzymes. In particular, the present invention provides mutant thioesterase enzymes that have altered properties, for example, altered substrate specificity, altered activity, altered selectivity, and/or altered proportional yields in the product mixtures. The present invention also provides polynucleotides encoding such mutant thioesterase enzymes, and vectors and host cells comprising such polynucleotides. The invention further provides for novel uses of thioesterases in the production of various fatty acid derivatives, which are useful as, or as components of, industrial chemicals and fuels.

Classifications:

International (IPC 8-9): C07H21/00 C07H21/04 C08G63/48 C10L1/02 C10L1/188 C12N1/00 C12N1/13 C12N1/15 C12N1/19 C12N1/21 C12N15/00 C12N15/55 C12N15/63 C12N5/10 C12N9/16 C12N9/18 C12P21/04 C12P21/06 C12P7/62 C12P7/64 C12R1/19 (Advanced/Invention); C12P7/64 C12R1/19 (Advanced/Non-invention); C07H21/00 C08G63/00 C10L1/00 C10L1/10 C12N1/00 C12N15/63 C12N9/16 C12P7/64 (Core/Invention); C10L C12N (Subclass/Invention)
CPC: C12N9/18 C12N15/00 C12Y301/02 C12N15/63 C12N9/16 C10L1/02
European: C10L1/02 C12N9/16
US: 1/1 435/134 435/196 435/243 435/252.3 435/252.33 435/252.34 435/320.1 44/385 536/23.2 554/1

PatBase - US2010154293_AA

Patent Application Publication Jan. 24, 2010 Sheet 1 of 226 US 2010/0154293 A1

FIG. 1
Accession Numbers are from NCBI, GenBank, Release 150.0 as of March 2008
EC Numbers are from KEGG, Release 42.0 as of April 2007 (plus daily updates up to March 2008)

CATEGORY	GENE	NAME	ACCESSION NUMBER	EC NUMBER	MODIFICATION	USE	ORGANISM
1. Fatty Acid Production Inhibitors		Product Description Inhibitor					
		increase fatty-CoA					
		reduce production of derivatives and intermediates					
		alter fatty acid metabolism					
		alter other pathways that consume fatty acids					
		Acetyl-CoA	AC073209, NP_414721	6.4.1.2	Over-express	increase fatty-CoA production	Escherichia coli, Lactococcus
	acAA	isobutyrylthioesterase					
	acAB	acetyl-CoA	NP_417721	6.4.1.2	Over-express	increase fatty-CoA production	Escherichia coli, Lactococcus
	acAC	acetyl-CoA	NP_417722	6.4.1.2	Over-express	increase fatty-CoA production	Escherichia coli, Lactococcus
	acAD	acetyl-CoA	NP_418819	6.4.1.2	Over-express	increase fatty-CoA production	Escherichia coli, Lactococcus

Family:

Publication number	Publication date	Application number	Application date
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IN05606DN2011 A	20121130	IN2011DN05606	20110720
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US9175234 BB	20151103	US20090645497	20091223
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Priority:

AU20090329970	20091223	AU20160225853	20160908	US20080140600P	20081223
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WO2009US69356	20091223				

Probable Assignee: LS9 INC

Assignee(s): (std): ALIBHAI MURTAZA ; ARLAGADDA VIKRANTH ; CLARKE ELIZABETH ; GROBAN ELI ; HOM LOUIS ; TRINH NA ; LS9 INC ; REG LIFE SCIENCES LLC ; HU ZHIHAO

Inventor(s): (std): ALIBHAI MURTAZA ; ARLAGADDA VIKRANTH ; CLARKE ELIZABETH ; GROBAN ELI ; HOM LOUIS ; HOM ROY ; HU ZHIHAO ; LOUIS HOM ; MURTAZA ALIBHAI ; NA TRINH ; TRINH NA

Agent(s): FISHER ADAMS KELLY; FISHER ADAMS KELLY PTY LTD; SPRUSON AND FERGUSON; TORYS LLP; BERESKIN AND PARR LLP SENCRL SRL; GRUENECKER KINKELDEY STOCKMAIR AND SCHWANHAUESSER; LS9 INC; BRIGITTE A; CHEN WENFANG

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

10) Family number: 56254366 (US2014209093A)

© PatBase

Title: PROCESSING BIOMASS

Abstract: Source: US2014209093A Methods and systems are described for processing cellulosic and lignocellulosic materials into useful intermediates and products, such as energy and fuels. For example, conveying systems and methods, such as highly efficient vibratory conveyors, are described for the processing of the cellulosic and lignocellulosic materials.

Classifications:

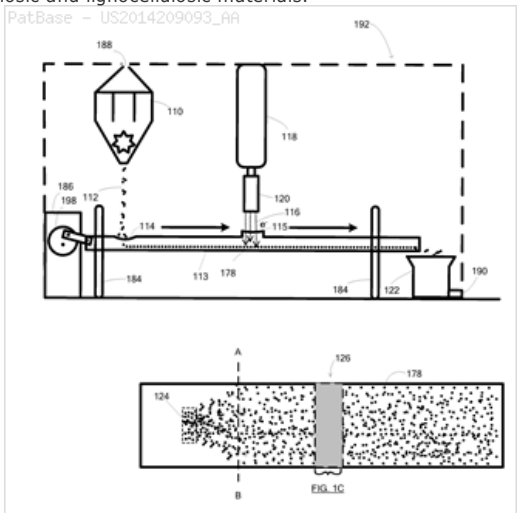
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CPC: C13K13/002 B01D53/32 B01J2219/0886 B65G53/40 C12P19/02 C12P7/06 B01D15/02 E04B1/92 G21F7/00 E04B2001/925 H01J37/317 C12P2201/00 G21K5/04 G21K5/10 H01J5/18 B01J19/08 B65G27/04 B65G2812/0396 H01J33/04 H01J7/26 C10L1/02 C10L2200/0469 B01J19/14 B65G33/14 B01D35/00 B65G33/24 C12P7/04 B01J20/0225 C07C31/00 C12P7/40 C12P7/54 E04H5/00 C12P19/00 F01D15/10 F22B1/02 C12P7/10 B01D61/44 C12P7/52 C12P2203/00 C12M47/00 C12M47/10 H01J2237/31 H01J2237/3165 Y02E50/17 Y02E50/343 Y02P20/136 C10L9/08 B65G53/04 B65G27/00 H01J2237/202 C13K1/02 C12P19/14 C07C29/149 A61L2/087 B01J19/085 B01J19/12 B01J19/123 B01J19/125 B01J19/22 C10B19/00 C10B53/02 C10G1/02 C10G32/04 C10L5/442 C10L5/445 C10L2290/24 C10L2290/28 C10L2290/36 C10L2290/52 G21F3/00 Y02E50/10 Y02E50/14 Y02E50/16 Y02E50/30 Y02P20/145 Y02E60/17 C07C31/12 B01J2219/0871 B01J2219/0879 C08H8/00 H01J2237/2002 B01J2219/12 B01J2219/0869 H01J37/20 D21B1/02 Y02E50/32 Y02W10/33 Y02W10/37

US: 1/1 127/37 127/42 198/339.1 204/157.3 204/157.63 204/540 210/656 250/453.11 250/454.11 250/492.1 250/492.3 250/493.1 250/515.1 406/106 422/186 435/135 435/136 435/140 435/141 435/147 435/148 435/150 435/157 435/158 435/160 435/161 435/162 435/165 435/99

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Publication number	Publication date	Application number	Application date
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Priority:

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Probable Assignee: XYLECO INC

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Inventor(s): THOMAS CRAIG ; MEDORFF MARSHALL ; MASTERMAN THOMAS ; MUKHERJEE MARIA STAPLETON ; PARADIS ROBERT ; PETERS ANTHONY ; RODITI SOLOMON I ; PAPOULIS ANDREW ; PARADIS ROBERT PARADIS ROBERT ; ROBERT PARADIS ; RANDY LAVIGNE ; THOMAS MASTERMAN ; THOMAS MASTENRMAN ; STAPLETON MUKHERJEE MAIA NATALYA A KORYABKINA ; THOMAS CRAIG MASTERMAN ; SOLOMON I RODITI ; PARADIS ROBERTPARADIS ROBERT ; MASTENRMAN THOMAS ; MAIA STAPLETON MUKHERJEE ; MICHAEL W FINN ; MASTERMAN THOMAS CRAIGMASTERMAN THOMAS CRAIG ; MEDOFF MARSHALLMEDOFF MARSHALL ; JOHN J BAXTER ; JOHN M CAHILL

Agent(s): WRAYS; MARKS AND CLERK; KEANE PAUL FACHTNA; OCONNELL MAURA; CASEY ALAN MICHAEL; DONALDSON AND BURKINSHAW LLP; LEBER PATENT LAW PC; WILMER CUTLER PICKERING HALE AND DORR LLP; LEBER IP LAW; DE REGE THESAURO FRANCESCO; MORRELL DENNIS G; MORRELL DENNIS G ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IR IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SA SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

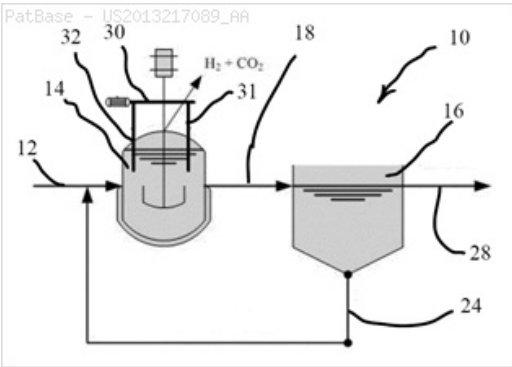
11) Family number: 54589513 (US2013217089A) © PatBase

Title: METHOD AND SYSTEM FOR ELECTRO-ASSISTED HYDROGEN PRODUCTION FROM ORGANIC MATERIAL

Abstract: Source: US2013217089A A method for producing hydrogen from organic material. Organic material and hydrogen-producing microorganisms are provided in a completely mixed bioreactor for breaking down the organic material into H₂, CO₂, fatty acids, and alcohols. H₂, CO₂, and a first liquid effluent are recovered from the completely mixed bioreactor. The first liquid effluent includes hydrogen-producing microorganisms, fatty acids, and alcohols. The first liquid effluent is provided into a gravity settler for separating the first liquid effluent into a concentrated biomass (including hydrogen-producing microorganisms) and a second liquid effluent (including at least a portion of the fatty acids and the alcohols). The concentrated biomass is provided into the completely mixed bioreactor. An input voltage is applied to at least one of the completely mixed bioreactor and the gravity settler for facilitating an electrohydrogenesis process therein.

Classifications:

International (IPC 8-9): C12M1/00 C12M1/107 C12M1/26 C12M1/42 C12M3/00 C12N13/00 C12P1/00 C12P3/00 C12P7/02 C12P7/64 C25B1/00 C25B1/02 C25B9/00 C25B9/06 (Advanced/Invention) **CPC:** C12P3/00 C25B1/02 C12M21/04 C12M29/18 C12M33/22 C12M35/02 C25B9/00 Y02E50/343 C25B1/00 C25B9/06 **US:** 1/1 204/270 205/341 205/345 435/168 435/290.2



Family:

Publication number	Publication date	Application number	Application date
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AU2013220906 BB	20160526	AU20130220906	20130215
CA2860463 AA	20140625	CA20132860463	20130215
CN104245944 A	20141224	CN201380019493	20130215
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WO13120206 A1	20130822	WO2013CA50121	20130215

Priority:

US20120600325P 20120217 US20130768449 20130215 WO2013CA50121 20130215
US20160219881 20160726

Probable Assignee: GREENFIELD ETHANOL INC

Assignee(s): (std): GREENFIELD ETHANOL INC ; GREENFIELD SPECIALTY ALCOHOLS INC

Assignee(s): GREENFIELD SPECIALTY ALCOHOLS INC1400 - 20 TORONTO STREETTORONTOO1M5C 2B8CA ; HAFEZ HISHAM MOHAMED1 DENLAW ROADLONDONO1N6G 3L3CA

Inventor(s): (std): HAFEZ HISHAM MOHAMED

Inventor(s): HAFEZ HISHAM MOHAMED1 DENLAW ROADLONDONO1N6G 3L3CA

Agent(s): SHELSTON IP; SHELSTON IP PTY LTD; BORDEN LADNER GERVAIS LLP; POTTER CLARKSON LLP; FRITZ JOACHIM T ET AL

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

Title: BIOLOGICAL AND CHEMICAL PROCESS UTILIZING CHEMOAUTOTROPHIC MICROORGANISMS FOR THE CHEMOSYNTHETIC FIXATION OF CARBON DIOXIDE AND/OR OTHER INORGANIC CARBON SOURCES INTO ORGANIC COMPOUNDS, AND THE GENERATION OF ADDITIONAL USEFUL PRODUCTS

Abstract: Source: US2010120104A The invention described herein presents compositions and methods for a multistep biological and chemical process for the capture and conversion of carbon dioxide and/or other forms of inorganic carbon into organic chemicals including biofuels or other useful industrial, chemical, pharmaceutical, or biomass products. One or more process steps in the present invention utilizes chemoautotrophic microorganisms to fix inorganic carbon into organic compounds through chemosynthesis. An additional feature of the present invention describes process steps whereby electron donors used for the chemosynthetic fixation of carbon are generated by chemical or electrochemical means, or are produced from inorganic or waste sources. An additional feature of the present invention describes process steps for the recovery of useful chemicals produced by the carbon dioxide capture and conversion process, both from chemosynthetic reaction steps, as well as from non-biological reaction steps.

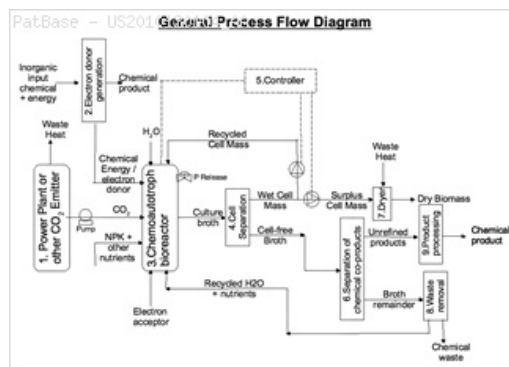
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International (IPC 8-9): C05F11/00 C09K17/00 C10L1/02 C12M1/00 C12M1/12 C12M3/02 C12N1/12 C12N1/20 C12N1/21 C12N1/32 C12N15/00 C12N15/74 C12P1/00 C12P1/04 C12P11/00 C12P3/00 C12P5/00 C12P5/02 C12P7/00 C12P7/02 C12P7/06 C12P7/16 C12P7/40 C12P7/54 C12P7/62 C12P7/64 C12P9/00 C12R1/01 C25B1/04 C25B15/02 (Advanced/Invention); C12R1/01 C12R1/05 C12R1/41 C12R1/89 (Advanced/Non-invention); C12P1/00 C12P1/04 C12P3/00 C12P5/00 C12P7/02 C12P7/40 (Core/Invention)

CPC: C12P7/16 C12P7/40 C12M29/20 C25B1/04 C12N1/32 Y02E50/346 C12P7/6463 C12P7/6409 C12P7/64 C12N9/93 C12P5/02 C12P7/18 C12P7/24 Y02W30/47 C12P7/625 C12M23/34 C12M29/02 C12M29/08 C12M29/18 C12M43/04 C12M47/02 C12N1/12 C25B15/02 Y02E60/366 Y02P20/133 C12P5/00 C12P5/023 Y02E50/10 Y02E50/343 C12P1/04 C12P3/00 C12P7/065 C12P7/54 Y02E50/17 C12N1/20 C12N9/0008 C12N9/16 C12N9/88 C12P5/002 C12P5/026 C12P7/04 C12P7/649 Y02E50/13 Y02P20/52

European: C12N1/12 C12N1/20 C12P1/04 C12P3/00 C12P5/02B C12P7/06D C12P7/54 C12P7/64 C12P7/64E Y02E50/17 Y02E50/34B

US: 1/1 204/278 205/628 435/134 435/135 435/136 435/136S 435/140 435/140P 435/160 435/160S 435/161 435/161S 435/166 435/166S 435/167 435/167S 435/168 435/168S 435/170 435/170S 435/252.3 435/252.34 435/300.1 435/41 435/41S



Family:

Publication number	Publication date	Application number	Application date
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Priority:

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Probable Assignee: KIVERDI INC

Assignee(s): (std): DYSON LISA ; KIVERDI INC ; REED JOHN ; REED JOHN S ; REED JOHN STUART ; SEQUESCO

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Inventor(s): LISA DYSON ; JOHN REED

Agent(s): BRIDLE ANDREW BARRY ; YUSARN AUDREY ; JOHN REED ; JILL A ; POMIANEK MICHAEL J

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BN BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PA PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW