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Experimental Station, Building 268 200 Powder Mill Road, Wilmington, Delaware 19880-0268 (US).

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(72) Inventors; and
(75) Inventors/Applicants (for US only): **ROESCH, Brian, Michael** [US/US]; 103 Betsy Rawls Drive, Middletown, Delaware 19709 (US). **BURLEW, Keith, H.** [US/US]; 502 Burnham Lane, Middletown, Delaware 19709 (US). **HALLAM, John, W.** [US/US]; 109 Foxtail Circle, Bear, Delaware 19701 (US). **LOWE, David, J.** [US/US]; 3 Ascension Drive, Wilmington, DE 19808 (US). **ZAHER, Joseph, J.** [US/US]; 3 Haileys Trail, Newark, DE 19711 (US).

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(74) Agent: **LHULIER, Christine, M.**; E. I. du Pont de Nemours and Company, Legal Patent Records Center, 4417 Lancaster Pike, Wilmington, DE 19805 (US).

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(71) Applicant (for all designated States except US): **BUTAMAX(TM) ADVANCED BIOFUELS LLC** [US/US];

[Continued on next page]

(54) Title: METHODS AND SYSTEMS FOR REMOVING UNDISSOLVED SOLIDS PRIOR TO EXTRACTIVE FERMENTATION IN THE PRODUCTION OF BUTANOL

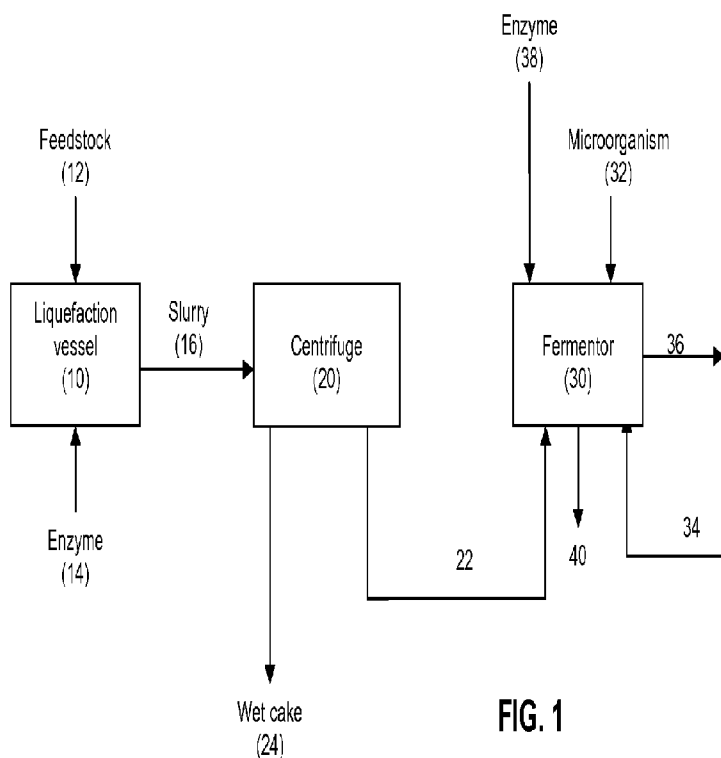


FIG. 1

(57) Abstract: A method and system for efficiently producing a fermentative product alcohol such as butanol utilizing in situ product extraction are provided. The efficiency is obtained through separating undissolved solids after liquefying a given feedstock to create a feedstock and prior to fermentation, for example, through centrifugation. Removal of the undissolved solids avoids problems associated with having the undissolved solids present during in situ production extraction, and thereby increases the efficiency of the alcohol production.

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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER INV. C12P7/16 C07C29/86 B01D21/26 C12M1/00 ADD.		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) C12P C07C B01D C12M		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal, BIOSIS, EMBASE, WPI Data		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2009/026706 A1 (IOGEN ENERGY CORP [CA]; EDWARDS JASON B [CA]; MCMILLAN LISA [CA]; MUNK) 5 March 2009 (2009-03-05) paragraph [0052]	1-3, 9-39, 42-54 4-8,40, 41
Y	----- WO 2009/149270 A2 (DU PONT [US]; GRADY MICHAEL CHARLES [US]; JAHIC MEHMEDALIJA [US]; PATN) 10 December 2009 (2009-12-10) the whole document	4-8,40, 41
X	----- DE 10 2006 040567 A1 (BAYER TECHNOLOGY SERVICES GMBH [DE]) 6 March 2008 (2008-03-06) the whole document -----	1-3, 9-18,23, 24, 31-39, 42-45, 47-49
-/--		
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.		
* Special categories of cited documents :		
"A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. "&" document member of the same patent family	
Date of the actual completion of the international search	Date of mailing of the international search report	
18 October 2011	28/12/2011	
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Schneider, Patrick	

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2011/040899

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-54

Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No PCT/US2011/040899

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>US 4 491 522 A (ISHIDA MASAHIKO [JP] ET AL) 1 January 1985 (1985-01-01)</p> <p style="margin-left: 40px;">the whole document -----</p>	<p>1-3, 9-18,23, 24, 31-39, 42-45, 47-49</p>

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/US2011/040899

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FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-54

A method comprising separating solid and aqueous phase from biomass feedstock slurry wherein the aqueous phase is used for fermentation to produce alcohols like butanol and a fermentation system comprising a centrifuge to perform said method

2-5. claims: 55-58

Each compositions as defined in claims 55 to 58
