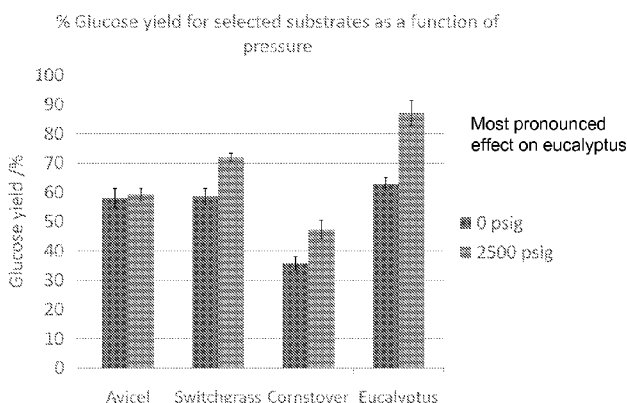




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(54) **Title:** USE OF PRESSURE TO ENHANCE IONIC LIQUID PRETREATMENT OF BIOMASS



* 24 hour hydrolysis

(57) **Abstract:** An Improved processes for pretreating a biomass using ionic liquids to increase the accessibility of the biomass to hydrolysis and subsequent reactions such as fermentation. The pretreatment processes of the present invention overcome the recalcitrance of the biomass and produce high sugar yields. It has been found that: (1) the use of pressure increases glucose yield following hydrolysis of the pretreated biomass; (2) the use of pressure reduces temperature requirements, while increasing glucose yields; (3) the use of pressure enhances process kinetics, thereby reducing reaction times, while increasing glucose yields; (4) the use of pressure allows for the use of a co-solvent in the biomass pretreatment process, thereby reducing ionic liquid requirements and increasing loading; and (5) the use of pressure does not have an impact on the morphology or crystallinity of the biomass.



INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 12/42790

A. CLASSIFICATION OF SUBJECT MATTER
 IPC(8) - C13K 1/02 (2012.01)
 USPC - 127/37; 435/132
 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)
 IPC(8)- C13K 1/02 (2012.01);
 USPC- 127/37; 435/132

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
 Patents and NPL (classification, keyword; search terms below)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
 PubWest (US Pat, PgPub, EPO, JPO), GoogleScholar (PL, NPL), FreePatentsOnline (US Pat, PgPub, EPO, JPO, WIPO, NPL);
 search terms: pretreat, digest, biomass, ionic, salt, liquid, fluid, ethyl, methylimidazolium, acetate, pressure, hydrolysis, glucose, psi

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X - Y	WO 2010/043424 A1 (STREFFER et al.) 22 April 2010 (22.04.2010), pg 2, ln 3 to pg 3, ln 1; pg 4, ln 5 to pg 5, ln 22; pg 6, ln 17 to pg 7, ln 2; pg 7, ln 15-32; pg 8, ln 19-20; pg 9, ln 28-33	1-12, 16-32, 34 ----- 13-15, 33
X	US 2011/0073805 A1 (DIBBLE et al.) 31 March 2011 (31.03.2011), para [0010], [0073], [0082]	1-3
Y	US 2011/0137085 A1 (TRAHANOVSKY et al.) 09 June 2011 (09.06.2011), para [0011], [0025], [0047], [0054]	13-15
Y	US 2009/0221042 A1 (DALE et al.) 03 September 2009 (03.09.2009), para [0027], [0028], [0033], [0044], [0047]	33

Further documents are listed in the continuation of Box C.

* Special categories of cited documents:	"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
"A" document defining the general state of the art which is not considered to be of particular relevance	"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
"E" earlier application or patent but published on or after the international filing date	"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
"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)	"&" document member of the same patent family
"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	

Date of the actual completion of the international search 14 August 2012 (14.08.2012)	Date of mailing of the international search report 04 SEP 2012
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