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Declarations under Rule 4.17:

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- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))
- of inventorship (Rule 4.17(iv))

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(54) Title: GLYCERIDES AND FATTY ACID MIXTURES AND METHODS OF USING SAME

(57) Abstract: Green compositions and technologies are provided. In an embodiment, the present invention provides a method of separating a first material from a second material. For example, the method can comprise mixing the first material and the second material in a slurry with a beneficiation composition. The beneficiation composition can comprise one or more glyceride and fatty acid mixtures extracted from an ethanol process. Air bubbles can be provided in the slurry to form bubble-particle aggregates with the first material and the bubble-particle aggregates can be allowed to be separated from the second material.



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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2011/067359**A. CLASSIFICATION OF SUBJECT MATTER***C07C 29/74(2006.01)i, C07C 31/22(2006.01)i, C07C 51/42(2006.01)i, C07C 59/285(2006.01)i, C07B 63/00(2006.01)i*

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)

C07C 29/74; B01D 37/02; B03D 1/14; B03D 1/001; B03D 1/02; B03D 1/006

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: slurry, coal, beneficiation, bubble-particle agglomerate, glyceride, fatty acid, ethanol process.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2010-0252487 A1 (TRAN, BO L.) 07 October 2010	1-5, 7-12
A	See abstract; paragraph [0004], [0039], [0046], [0049]; claims 1 & 4.	6, 13
A	WO 2007-098115 A2 (NALCO COMPANY) 30 August 2007 See examples 1-2; claim 1.	1-13
A	US 6375853 B1 (YOON, ROE-HOAN) 23 April 2002 See claims 1 & 3.	1-13
A	US 2009-0008301 A1 (YOON, ROE-HOAN) 08 January 2009 See abstract; claims 22 & 24.	1-13



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

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"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

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"&" document member of the same patent family

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Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2010-0252487 A1	07.10.2010	AU 2007-217875 A1	30.08.2007
		AU 2007-217875 B2	22.09.2011
		AU 2008-338547 A1	25.06.2009
		CA 2642908 A1	30.08.2007
		CA 2642908 C	19.07.2011
		CA 2708169 A1	25.06.2009
		CN 101384369 A	11.03.2009
		CN 101896280 A	24.11.2010
		EP 1996334 A2	03.12.2008
		US 2007-0187300 A1	16.08.2007
		US 2008-0093267 A1	24.04.2008
		US 7837891 B2	23.11.2010
		US 7942270 B2	17.05.2011
		WO 2007-098116 A2	30.08.2007
		WO 2007-098116 A3	20.11.2008
		WO 2009-079379 A1	25.06.2009
		WO 2011-159964 A2	22.12.2011
		WO 2011-159964 A3	12.04.2012
WO 2007-098115 A2	30.08.2007	AU 2007-217874 A1	30.08.2007
		AU 2007-217874 B2	23.06.2011
		CA 2642897 A1	30.08.2007
		CA 2642897 C	15.11.2011
		CN 101384370 A	11.03.2009
		EA 200801814 A2	27.02.2009
		EA 200801814 A3	30.06.2009
		EP 2007523 A2	31.12.2008
		EP 2007523 A4	13.05.2009
		US 2007-0187301 A1	16.08.2007
		US 7624878 B2	01.12.2009
		WO 2007-098115 A3	20.11.2008
		ZA 200807341 A	26.08.2009
US 6375853 B1	23.04.2002	None	
US 2009-0008301 A1	08.01.2009	US 2003-146134 A1	07.08.2003
		US 6799682 B1	05.10.2004
		US 6871743 B2	29.03.2005