

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
03 February 2022 (03.02.2022)



(10) International Publication Number
WO 2022/026913 A1

(51) International Patent Classification:

C10G 3/00 (2006.01) *C10G 53/10* (2006.01)
C10G 25/06 (2006.01) *C10G 53/12* (2006.01)
C10G 17/04 (2006.01) *C11B 3/04* (2006.01)
C10G 31/10 (2006.01) *C11B 3/06* (2006.01)
C10G 19/02 (2006.01) *C11B 3/10* (2006.01)

(21) International Application Number:

PCT/US2021/044042

(22) International Filing Date:

30 July 2021 (30.07.2021)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/059,749 31 July 2020 (31.07.2020) US

(71) Applicant: **REG SYNTHETIC FUELS, LLC** [US/US];
c/o Renewable Energy Group, 416 South Bell Avenue,
Ames, Iowa 50010 (US).

(72) Inventors: **ABHARI, Ramin**; 11229 S. 67th East Court,
Bixby, Oklahoma 74008 (US). **HAVERLY, Martin**; 2304
Lakeview Drive, Ames, Iowa 50010 (US). **FISHER,**
Trevor; 13417 S. 68th East Ave., Bixby, Oklahoma 74008
(US).

(74) Agent: **MCPARLAND, James P.** et al.; Foley & Lardner
LLP, 3000 K Street N.W., Suite 600, Washington, District
of Columbia 20007 (US).

(81) Designated States (*unless otherwise indicated, for every
kind of national protection available*): AE, AG, AL, AM,
AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ,
CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO,
DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN,

(54) Title: METHOD FOR THE PRETREATMENT OF A BIOFUEL FEEDSTOCK

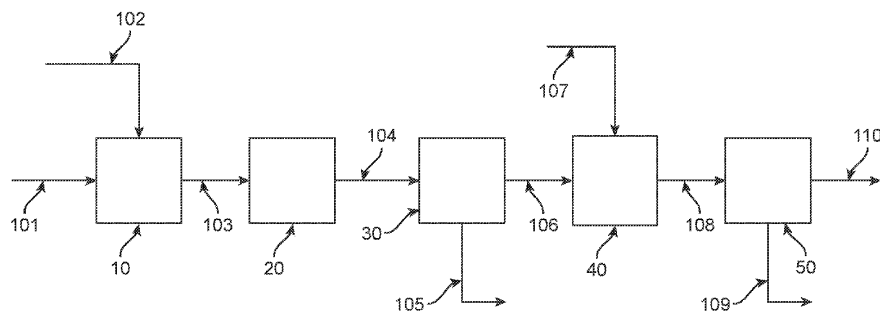


FIG. 1

(57) Abstract: In an aspect, a method is disclosed that includes contacting a composition with an aqueous solution to yield a mixture, where the composition includes one or more of animal fats, animal oils, plant fats, plant oils, vegetable fats, vegetable oils, greases, and used cooking oil, about 5 wt.% or more of free fatty acids, about 10 wppm or more of total metals, about 8 wppm or more phosphorus, about 20 wppm or more of nitrogen, and the aqueous solution includes ((NH₄)₂H₂EDTA, (NH₄)₄EDTA, a monoammonium salt of diethylenetriaminepentaacetic acid, a diammonium salt of diethylenetriaminepentaacetic acid, a triammonium salt of diethylenetriaminepentaacetic acid, a tetraammonium salt of diethylenetriaminepentaacetic acid, (NH₄)₅DTPA, a combination of citric acid and Na₄EDTA, a combination of citric acid and Na₂H₂EDTA, a combination of citric acid and a monosodium salt of diethylenetriaminepentaacetic acid, a combination of citric acid and a disodium salt of diethylenetriaminepentaacetic acid, a combination of citric acid and a trisodium salt of diethylenetriaminepentaacetic acid, a combination of citric acid and a tetrasodium salt of diethylenetriaminepentaacetic acid, a combination of citric acid and Na₅DTPA, or a combination of any two or more thereof, where the method further includes centrifuging the mixture to yield a first treated composition, wherein the first treated composition has less total metals and less phosphorus than the composition.

[Continued on next page]

HR, HU, ID, IL, IN, IR, IS, IT, JO, JP, KE, KG, KH, KN,
KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD,
ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO,
NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW,
SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN,
TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:

— with international search report (Art. 21(3))