

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
09 November 2023 (09.11.2023)



(10) International Publication Number
WO 2023/215554 A1

(51) International Patent Classification:

C11C 1/10 (2006.01) C10L 1/02 (2006.01)
C11C 3/00 (2006.01) C10G 1/00 (2006.01)

(21) International Application Number:

PCT/US2023/021149

(22) International Filing Date:

05 May 2023 (05.05.2023)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/339,260 06 May 2022 (06.05.2022) US

(71) Applicant: **RENEWABLE ENERGY GROUP, INC.**
[US/US]; 416 South Bell Avenue, Ames, Iowa 50010 (US).

(72) Inventors: **SLADE, David**; 412 26th Street, Ames, Iowa 50010 (US). **ABHARI, Ramin**; 11229 S. 67th East Court, Bixby, Oklahoma 74008 (US). **HAVERLY, Martin**; 2304 Lakeview Drive, Ames, Iowa 50010 (US).

(74) Agent: **CARTER, Ryan N.**; 625 First Street SE, Ste. 400, Cedar Rapids, Iowa 52401-2030 (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, CV, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, MG, MK, MN, MU, 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, CV, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SC, 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, ME, 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).

(54) Title: LIPID-ASSISTED CONVERSION

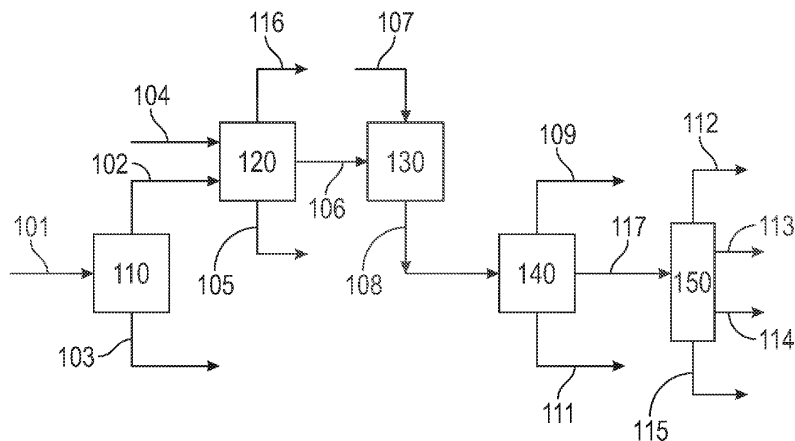


FIG. 2

(57) Abstract: A method for converting a bio-oil derived from lignocellulosic biomass to a fuel or fuel blendstock. The method may include contacting the bio-oil with a lipid or lipid derivative to form an organic phase comprising phenolic compounds and an aqueous phase. The organic phase is separated from the aqueous phase and subjected to hydrogenation and deoxygenation in a hydroprocessing reactor to produce a hydrocarbon product, a gas product, and water. The hydroprocessing reactor hydrocarbon product is fractionated into fuel products comprising gasoline and kerosene/diesel.

[Continued on next page]

WO 2023/215554 A1

Published:

- *with international search report (Art. 21(3))*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*