

(51) International Patent Classification:

C10G 29/04 (2006.01) C10G 29/20 (2006.01)

C10G 29/10 (2006.01) C10C 3/02 (2006.01)

(21) International Application Number:

PCT/US2012/046939

(22) International Filing Date:

16 July 2012 (16.07.2012)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/508,415 15 July 2011 (15.07.2011) US

(71) Applicant (for all designated States except US): CERAM-ATEC, INC. [US/US]; 2425 South 900 West, Salt Lake City, Utah 84119 (US).

(72) Inventor; and

(75) Inventor/Applicant (for US only): GORDON, John [US/US]; 958 North Terrace Hills Dr., Salt Lake City, Utah 84103 (US).

(74) Agent: FONDA, David; 2425 South 900 West, Salt Lake City, Utah 84119 (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, BR, BW, BY, BZ,

CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, 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, 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, ML, MR, NE, SN, TD, TG).

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))

(88) Date of publication of the international search report:

11 April 2013

(54) Title: UPGRADING PLATFORM USING ALKALI METALS

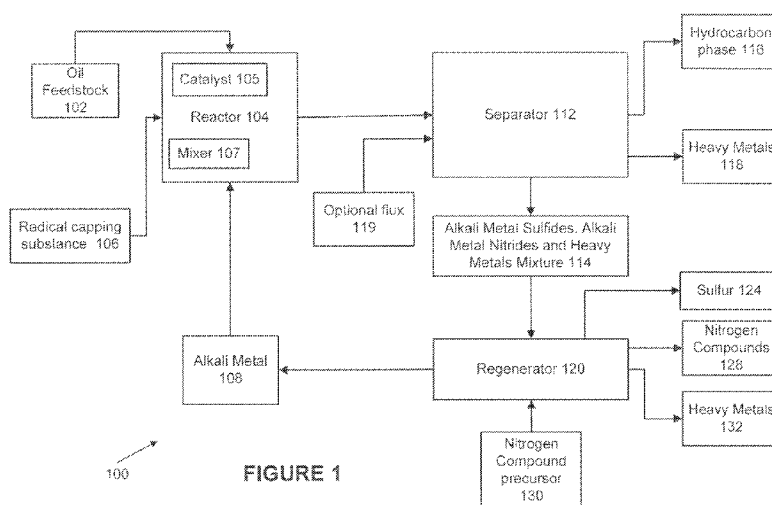


FIGURE 1

(57) **Abstract:** A process for removing sulfur, nitrogen or metals from an oil feedstock (102) (such as heavy oil, bitumen, shale oil, etc.) The method involves reacting the oil (102) feedstock with an alkali metal (108) and a radical capping substance (106). The alkali metal (108) reacts with the metal, sulfur or nitrogen content to form one or more inorganic products and the radical capping substance (106) reacts with the carbon and hydrogen content to form a hydrocarbon phase. The inorganic products may then be separated out from the hydrocarbon phase (116).