



(51) International Patent Classification:

C10G 29/04 (2006.01) *C10G 25/00* (2006.01)
C10G 29/00 (2006.01) *C10G 29/10* (2006.01)

(21) International Application Number:

PCT/US2010/058829

(22) International Filing Date:

3 December 2010 (03.12.2010)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/286,162 14 December 2009 (14.12.2009) US

(71) Applicant (for all designated States except US):
**EXXONMOBIL RESEARCH AND ENGINEERING
 COMPANY** [US/US]; 1545 Route 22 East, P.O. Box
 900, Annandale, NJ 08801-0900 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **YEGANEH,
 Mohsen S.** [US/US]; 826 Atkinson Circle, Hillsborough,

NJ 08844 (US). **JACOBS, Peter W.** [US/US]; 17C Betsy
 Ross Court, Bound Brook, NJ 08805 (US). **CODY, Ian
 A.** [AU/AU]; 41/223 North Terrace, Adelaide, South
 Australia, 5000 (AU). **LEVINE, Steven W.** [US/US]; 54
 Bonnell Street, Flemington, NJ 08822 (US). **SIROTA,
 Eric B.** [US/US]; 106 Bertron Road, Flemington, NJ
 08822 (US). **GUPTA, Ramesh** [US/US]; 57 Lawrence
 Drive, Berkley Heights, NJ 07922 (US). **WEISSMAN,
 Walter** [US/US]; 6 Dickens Road, Basking Ridge, NJ
 07920 (US).

(74) Agents: **PURWIN, Paul E.** et al.; Exxonmobil Research
 and Engineering Company, 1545 Route 22 East, P.O. Box
 900, Annandale, NJ 08801-0900 (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,

[Continued on next page]

(54) Title: METHODS AND SYSTEMS TO REMOVE POLAR MOLECULES FROM REFINERY STREAMS

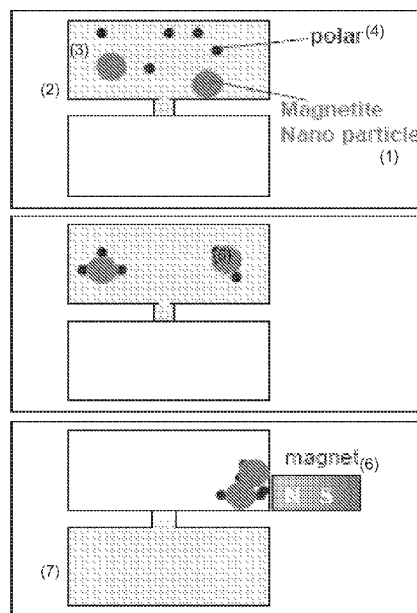


Fig. 1

(57) Abstract: The present invention relates to methods and systems for removing polar molecule contaminants from a refinery stream in connection with the processing of hydrocarbon fluids, chemicals, whole crude oils, blends and fractions in refineries and chemical plants that include adding high surface energy and/or high surface area nanoparticle compounds to a refinery stream to remove the polar molecule contaminants.



ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI,
NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, 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.

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).

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK,

Published:

— *without international search report and to be republished upon receipt of that report (Rule 48.2(g))*