

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
24 May 2018 (24.05.2018)



(10) International Publication Number
WO 2018/093530 A1

(51) International Patent Classification:
C10L 1/04 (2006.01) *C10L 1/06* (2006.01)

(21) International Application Number:
PCT/US2017/057612

(22) International Filing Date:
20 October 2017 (20.10.2017)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
62/422,085 15 November 2016 (15.11.2016) US

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

(72) Inventors: **CHOI, Eugene**; 14 Paddock Road, Marlton, NJ 08053 (US). **BOLAND, Matthew W.**; 2100 Sorrento Court, Philadelphia, PA 19145 (US). **GAO, Zhisheng**; 2

Buttonwood Way, Rose Valley, PA 19063 (US). **SALVI, Luca**; 135 Ardmore Avenue, Haddonfield, NJ 08033 (US). **MERCHANT, Shamel**; 2404 Sunny Slope Road, Bridgewater, NJ 08807 (US). **CRAWLEY, Bruce W.**; Hazel Wood House, Chiltern Road, Peppard Common, Oxfordshire RG9 5LP (GB).

(74) Agent: **BOONE, Anthony G.** 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, 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, HR, HU, ID, IL, IN, IR, IS, 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,

(54) Title: FUEL COMPOSITIONS FOR CONTROLLING COMBUSTION IN ENGINES

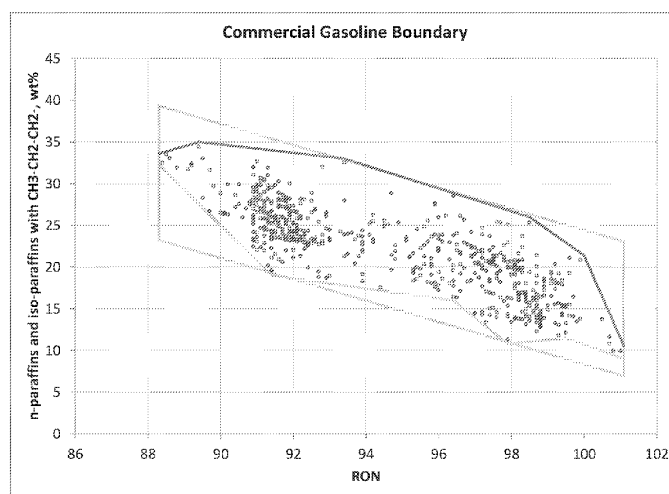


FIG. 4

(57) Abstract: Naphtha boiling range compositions are provided that can have improved combustion properties (relative to the research octane number of the composition) in spark ignition engines and/or compression ignition engines. The improved combustion properties can be achieved by controlling the total combined amounts of n-paraffins and isoparaffins that include a straight-chain propyl group (R1-CH₂-CH₂-CH₂-R₂). For such a straight-chain propyl group, R₂ can correspond to any convenient C_xH_y group that can appear in a paraffin or isoparaffin. R₁ can correspond to a hydrogen atom, making the straight-chain propyl group a terminal n-propyl group; or R_i can correspond to any convenient C_xH_y group that can appear in a paraffin or isoparaffin.

[Continued on next page]



WO 2018/093530 A1

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, 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).

Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

Published:

- *with international search report (Art. 21(3))*