

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

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
26 May 2011 (26.05.2011)

(10) International Publication Number
WO 2011/062855 A1

PCT

(51) International Patent Classification:

C01B 39/42 (2006.01) **C07C 6/12** (2006.01)
B01J 29/70 (2006.01) **C10G 45/64** (2006.01)

(21) International Application Number:

PCT/US2010/056656

(22) International Filing Date:

15 November 2010 (15.11.2010)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

12/590,952 17 November 2009 (17.11.2009) US

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(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, 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.

(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, 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))

(54) Title: HIGH ACTIVITY SMALL CRYSTAL ZSM-12

(57) Abstract: A porous, crystalline material is described having the framework structure of ZSM-12 and a composition involving the molar relationship: $X_2O_3 : (n)YO_2$ wherein X is a trivalent element, Y is a tetravalent element and n is less than about 45, e.g., less than about 40, wherein the average crystal size of the material is less than about 0.1 micron, which material is substantially free of impurities. The material is made by: (a) preparing a mixture capable of forming said material, said mixture comprising sources of alkali or alkaline earth metal (M), an oxide of trivalent element (X), an oxide of tetravalent element (Y), hydroxyl (OH⁻) ions, water, and an organic monoquaternary ammonium cation directing agent (R) and an organic diquaternary ammonium structure blocking agent (R'); (b) maintaining the mixture under sufficient conditions until crystals of said material are formed; and (c) recovering the crystalline material from step (ii). The material can be used as a hydrocarbon conversion process catalyst.



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