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(71) Applicant (for all designated States except US):

CHEVRON U.S.A. INC. [US/US]; 6001 Bollinger
 Canyon Road, San Ramon, California 94583 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **MIRONOV, Oleg**
 [RU/US]; 148 Bedford, Hercules, California 94547 (US).
KUPERMAN, Alexander E. [CA/US]; 231 Courtney
 Lane, Orinda, California 94563 (US). **HAN, Jinyi**
 [CN/US]; 440 Sycamore Circle, Danville, California
 94526 (US).

(74) Agents: **PHAM, Hanh T.** et al.; Chevron Corporation,
 Law Department, Post Office Box 6006, San Ramon, Cal-
 ifornia 94583-0806 (US).

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(54) Title: HYDROPROCESSING BULK CATALYST AND METHODS OF MAKING THEREOF

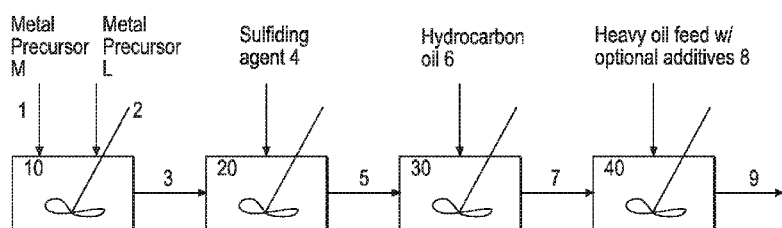


FIG. 1

(57) Abstract: A hydroprocessing bulk catalyst is provided. A process to prepare hydroprocessing bulk catalysts is also provided. The hydroprocessing catalyst has the formula $(R^p)_t(M^u)_a(L^v)_b(S^w)_d(C^x)_e(H^y)_f(O^z)_g(N^z)_h$, wherein M is at least a "d" block element metal; L is also at least a "d" block element metal, but different from M; t, u, v, w, x, y, z representing the total charge for each of the components (M, L, S, C, H, O and N, respectively); R is optional and in one embodiment, R is a lanthanoid element metal; $0 \leq i \leq 1$; $pi+ta+ub+vd+we+xf+yg+zh=0$; $0 < b$; $0 < b/a \leq 5$; $0.5(a+b) \leq d \leq 5(a+b)$; $0 < e \leq 11(a+b)$; $0 < f \leq 7(a+b)$; $0 < g \leq 5(a+b)$; $0 < h \leq 2(a+b)$. The catalyst has an X-ray powder diffraction pattern with at least three diffractions peak located at 2-θ angles of greater than 25°. In one embodiment, the catalyst is prepared by forming at least a sulfided catalyst precursors from at least two "d" block element metals; and mixing the catalyst precursor with a hydrocarbon compound to form the hydroprocessing catalyst composition. In another embodiment, the catalyst is prepared by the thermal decomposition of an oil dispersible sulfur containing organic metal precursor upon contact with a hydrocarbon oil, generating a slurry catalyst. In yet another embodiment, the catalyst is prepared from an in-situ or ex-situ sulfidation of "d" block element metal precursors in a solvent carrier.