

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
23 June 2022 (23.06.2022)



(10) International Publication Number
WO 2022/132877 A1

(51) International Patent Classification:

B01J 21/04 (2006.01) **B01J 38/02** (2006.01)
B01J 23/62 (2006.01) **B01J 38/12** (2006.01)
B01J 23/96 (2006.01) **C07C 5/32** (2006.01)
B01J 37/02 (2006.01) **C07C 11/06** (2006.01)

(21) International Application Number:

PCT/US2021/063481

(22) International Filing Date:

15 December 2021 (15.12.2021)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/127,452 18 December 2020 (18.12.2020) US

(71) Applicant: **DOW GLOBAL TECHNOLOGIES LLC**
(administrator) [US/US]; 2211 H.H. Dow Way, Midland,
Michigan 48674 (US).

(72) Inventors: **LUO, Lin**; 332 SH 332 E, Lake Jackson, Texas
77566 (US). **YANG, Yang**; 2301 North Brazosport Boule-
vard, Freeport, Texas 77541 (US). **KOEKEN, Adrianus**;
Herbert H. Downweg 5, 4542 Terneuzen (NL).

(72) Inventor: **STEARNS, Brien** (deceased).

(72) Inventors: **BOLLMANN, Luis**; 2301 North Brazosport
Boulevard, Freeport, Texas 77541 (US). **MALEK, An-
drzej**; c/o Dow Global Technologies LLC, 2211 H.H. Dow
Way, Midland, Michigan 48674 (US). **GOODFELLOW,
Brian W.**; 2301 North Brazosport Boulevard, Freeport,
Texas 77541 (US).

(74) Agent: **INGLE, Cory J.** et al.; Dinsmore & Shohl LLP,
One South Main Street, Fifth Third Center, Suite 1300, Day-
ton, Ohio 45402 (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, IT, 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, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN,
TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, 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,

(54) Title: CATALYST SYSTEMS USEFUL FOR DEHYDROGENATION

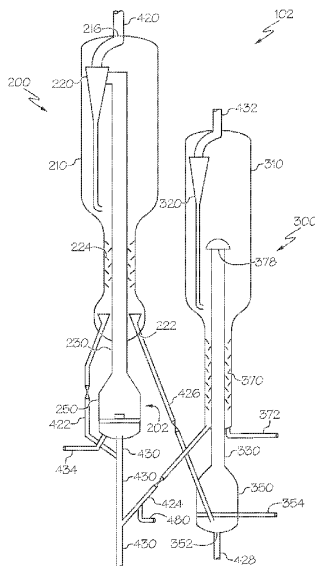


FIG. 1

(57) Abstract: According to one or more embodiments of the present disclosure, a catalyst system useful for dehydrogenation includes from 98 vol.% to 99.95 vol.% of a catalyst and from 0.05 vol.% to 2 vol.% of a combustion additive. The catalyst may include from 1 ppmw to 150 ppmw platinum, gallium, and a support material. The combustion additive may include from 150 ppmw to 1,000 ppmw platinum, gallium, and a support material. The combustion additive may include at least 1.1 times greater platinum than the catalyst.

WO 2022/132877 A1

[Continued on next page]

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))*