

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

(19) World Intellectual Property
Organization

International Bureau

(43) International Publication Date
02 March 2023 (02.03.2023)



(10) International Publication Number

WO 2023/028434 A1

(51) International Patent Classification:

B01J 23/31 (2006.01) **B01J 37/03** (2006.01)
B01J 37/00 (2006.01) **C07C 5/48** (2006.01)

(21) International Application Number:

PCT/US2022/075074

(22) International Filing Date:

17 August 2022 (17.08.2022)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/235,996 23 August 2021 (23.08.2021) US

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

(72) Inventors: **POLLEFEYT, Glenn**; c/o Dow Benelux B.V.,
Herbert H. Dowweg 5, 4542 NM Hoek, Postbus 48, 4530
AA Terneuzen (NL). **BLANN, Kevin**; c/o The Dow Chemi-
cal Company, 2301 North Brazosport Boulevard, Freeport,
Texas 77541 (US). **FERRARI, Daniela**; c/o The Dow
Chemical Company, 2301 North Brazosport Boulevard,
Freeport, Texas 77541 (US). **KIRILIN, Alexey**; c/o Dow
Benelux B.V., Herbert H. Dowweg 5, 4542 NM Hoek, Post-
bus 48, 4530 AA Terneuzen (NL). **CHOJECKI, Adam**; c/o
Dow Benelux B.V., Herbert H. Dowweg 5, 4542 NM Hoek,
Postbus 48, 4530 AA Terneuzen (NL). **CHUNG, Cheng L.**;
c/o The Dow Chemical Company, 2301 North Brazosport
Boulevard, Freeport, Texas 77541 (US). **MALEK, An-
drzej**; c/o The Dow Chemical Company, 2211 H.H. Dow
Way, Midland, Michigan 48674 (US).

(74) Agent: **BRENTLINGER, Nicolas A.** et al.; c/o Dinsmore
& Shohl LLP, One South Main Street, Fifth Third Center,
Suite 1300, Dayton, 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, CV, CZ, DE, DJ, DK, DM,
DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT,
HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, 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,
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))

(54) Title: CATALYST AND PROCESS FOR THE DEHYDROGENATION OF ALKANES TO OLEFINS

(57) Abstract: An oxidative dehydrogenation catalyst having: a structure having a formula $\text{Mo}_v\text{V}_w\text{Nb}_y\text{Bi}_z\text{O}_x$, where v is 1, w is from 0.1 to 0.5, y is from 0.001 to 0.3, z is from 0.01 to 0.3, and x is the oxygen content required to charge-balance the structure. The oxidative dehydrogenation catalyst has a Pba2-32 space group, characterized by reflections determined with Cu-K α X-ray diffraction (XRD) as follows..

WO 2023/028434 A1