



- (51) **International Patent Classification:**
B01D 53/86 (2006.01) *C01B 3/04* (2006.01)
- (21) **International Application Number:**
PCT/GB2025/050358
- (22) **International Filing Date:**
25 February 2025 (25.02.2025)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
2402672.6 26 February 2024 (26.02.2024) GB
- (71) **Applicant: JOHNSON MATTHEY DAVY TECHNOLOGIES LIMITED** [GB/GB]; 5th Floor, 2 Gresham Street, London EC2V 7AD (GB).
- (72) **Inventors: VINEY, Emily Jane;** c/o Johnson Matthey, PO Box 1, Belasis Avenue, Billingham TS23 1LB (GB). **BRANDMAIR, Maria Theresia;** c/o Johnson Matthey, Bahnhofstrasse 43, 96257 Redwitz (DE). **BAR, Ferdinand;** c/o Johnson Matthey, Bahnhofstrasse 43, 96257 Redwitz (DE). **ALCOVE CLAVE, Silvia;** c/o Johnson Matthey, Blounts Court Road, Sonning Common, Reading RG4 9NH (GB).

MA, MD, MG, MK, MN, MU, 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, UY, UZ, VC, VN, WS, ZA, ZM, ZW.

- (84) **Designated States** (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, CV, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SC, 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, ME, 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))*
- *of inventorship (Rule 4.17(iv))*

Published:

- *with international search report (Art. 21(3))*
- *in black and white; the international application as filed contained color or greyscale and is available for download from PATENTSCOPE*

- (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,

- (54) **Title:** PROCESS AND SYSTEM FOR TREATING AN EXHAUST GAS COMPRISING N₂O AND NO_x

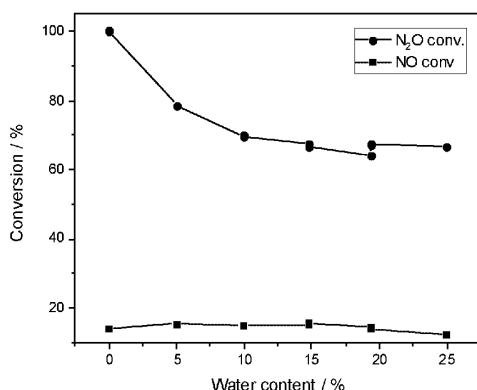


Figure 1

- (57) **Abstract:** The present application relates to a process and system for purifying an exhaust gas from an ammonia cracking reactor. The invention finds use in the industrial production of hydrogen from the catalytic cracking of ammonia. The process comprising the steps of i) contacting an exhaust gas with a first iron containing zeolitic catalyst at a first temperature to decompose N₂O and to produce an N₂O depleted exhaust gas; ii) combining the N₂O depleted exhaust gas with a reducing agent; and iii) contacting the N₂O depleted exhaust gas and the reducing agent with a first selective catalytic reduction catalyst at a second temperature to decompose NO_x and to produce a purified exhaust gas.