

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
06 February 2025 (06.02.2025)



(10) International Publication Number
WO 2025/029830 A1

(51) International Patent Classification:
B01D 69/12 (2006.01) *B01D 69/02* (2006.01)
B01D 67/00 (2006.01)

(21) International Application Number:
PCT/US2024/040228

(22) International Filing Date:
30 July 2024 (30.07.2024)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
63/516,805 31 July 2023 (31.07.2023) US

(71) Applicant: **THE REGENTS OF THE UNIVERSITY OF CALIFORNIA** [US/US]; 1111 Franklin Street, 12th Floor, Oakland, California 94607-5200 (US).

(72) Inventors: **HOEK, Eric**; c/o THE REGENTS OF THE UNIVERSITY OF CALIFORNIA, 1111 Franklin Street, 12th Floor, Oakland, California 94607-5200 (US). **WU, Jishan**; c/o THE REGENTS OF THE UNIVERSITY OF CALIFORNIA, 1111 Franklin Street, 12th Floor, Oakland, California 94607-5200 (US).

(74) Agent: **DANIELSON, Mark J.** et al.; FOLEY & LARDNER LLP, 3000 K Street N.W., Suite 600, Washington, District of Columbia 20007 (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, 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, 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:

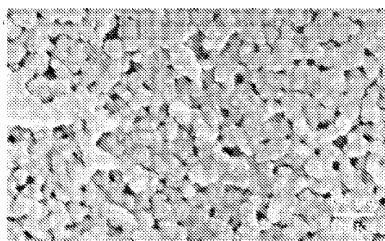
— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

Published:

— *with international search report (Art. 21(3))*
— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

(54) Title: HIGH PERFORMANCE COMPOSITE MEMBRANES

Fig. 1(a)



(57) Abstract: The present embodiments relate to novel thin-film composite (TFC) ultra-high pressure RO (UHPRO) membranes developed via ex-situ and in-situ crosslinked polyimide (PI) support membranes. These membranes exhibit superb compaction resistance, indicating the potential for achieving M/ZLD sustainably.



WO 2025/029830 A1