

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
17 July 2025 (17.07.2025)



(10) International Publication Number
WO 2025/149794 A1

(51) International Patent Classification:

C25B 1/04 (2021.01) C25B 11/032 (2021.01)
C25B 9/23 (2021.01) C25B 11/073 (2021.01)
C25B 13/08 (2006.01) B22F 3/10 (2006.01)

(21) International Application Number:

PCT/IB2024/061374

(22) International Filing Date:

15 November 2024 (15.11.2024)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

63/620,078 11 January 2024 (11.01.2024) US

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(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).

Published:

— with international search report (Art. 21(3))

(54) Title: ELECTROLYSER SYSTEM AND METHOD OF USE

(57) Abstract: An electrolyser comprising: a solid-state membrane; an ion-conductive electrolyte; a gas-electrolyte separator; and an anion exchange membrane ("AEM"). The electrolyser may be an anion exchange ("AE"), AEM, or alkaline electrolyser. An electrolyser comprising: an electrode; the electrode comprising a catalyst coating; the catalyst coating comprising micrometer-sized pores and/or a microporous internal structure. The electrode, micrometer-sized pores, and/or a microporous internal structure may be configured to increase gas release from the electrolyser. A method for manufacturing an electrode, the method comprising mixing a catalyst with a pore-forming agent to form a slurry.



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