

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

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
19 April 2001 (19.04.2001)

PCT

(10) International Publication Number
WO 01/28011 A1

- (51) International Patent Classification⁷: H01M 4/62, 4/80, 4/86
- (21) International Application Number: PCT/US00/27497
- (22) International Filing Date: 5 October 2000 (05.10.2000)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
09/415,449 8 October 1999 (08.10.1999) US
- (71) Applicant (for all designated States except US): REVEO, INC. [US/US]; 85 Executive Boulevard, Elmsford, NY 10523 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): YAO, Wayne [CN/US]; 49 Finnigan Avenue, Apt A-02, Saddle Brook, NJ 07663 (US). TSAI, Tsepin [—/US]; 312 N. Greely Avenue, Chappaqua, NY 10514 (US).
- (54) Title: ELECTROCHEMICAL ELECTRODE FOR FUEL CELL
- (57) Abstract: An electrochemical cathode includes a porous metal foam substrate, formed with a network of interconnected pores. An active layer and a hydrophobic microporous gas diffusion layer are both disposed on one or more surfaces of the metal foam substrate. The metal foam substrate serves as the current collector of the cathode. The microporous layer is a plastic material such as a fluoropolymer (i.e., PTFE). The cathode also includes a particulate microstructure reinforced by relatively strong bonding provided by sintering a polymeric binder within the three-dimensional interconnected porosity of the metal foam substrate. The reactive layers are preferably fabricated from the same material as binder. This advantageously enables a single roll pressing operation to simultaneously impregnate the binder into the substrate and form the reactive layers thereon.
- (81) Designated States (national): AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).
- Published:
— With international search report.
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

WO 01/28011 A1