

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
31 October 2002 (31.10.2002)

PCT

(10) International Publication Number
WO 02/086991 A1

(51) International Patent Classification⁷: **H01M 2/16**

(74) Agent: **JACOBS, Marvin, E.**; Koppel, Jacobs, Suite 215,
2151 Alessandro Drive, Ventura, CA 93001 (US).

(21) International Application Number: PCT/US02/12520

(22) International Filing Date: 19 April 2002 (19.04.2002)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
09/839,276 19 April 2001 (19.04.2001) US

(71) Applicant (for all designated States except US): **ZINC
MATRIX POWER, INC.** [US/US]; 121 East Mason
Street, Santa Barbara, CA 93101 (US).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,
CZ, DE, DK, DM, DZ, EC, 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, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG,
SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ,
VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, 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, TR), OAPI patent
(BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR,
NE, SN, TD, TG).

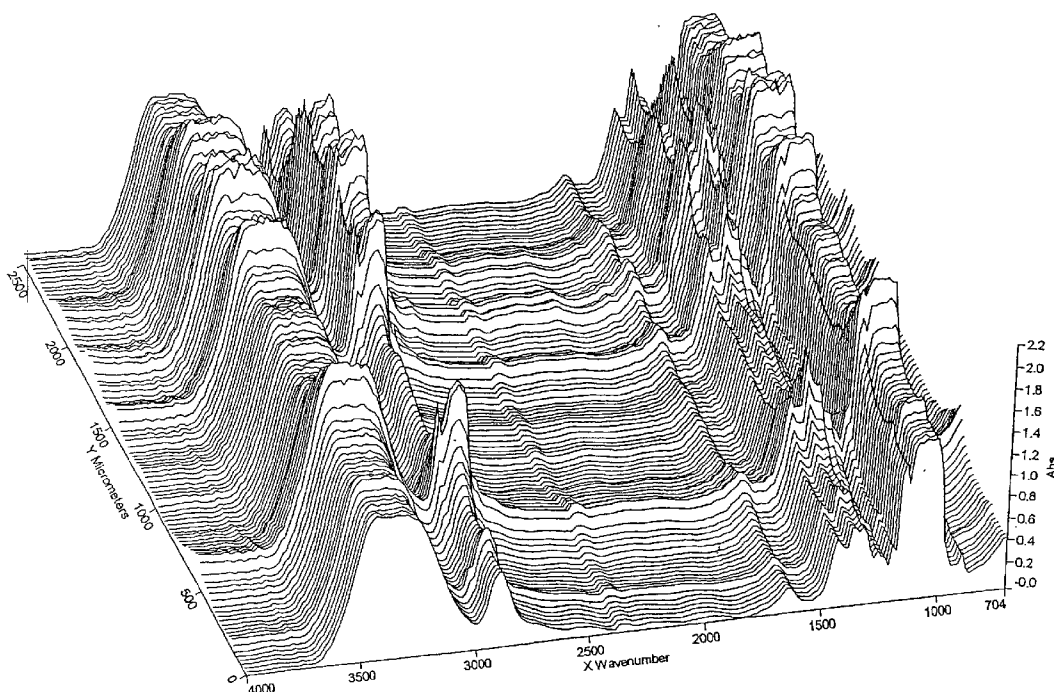
(72) Inventors; and

(75) Inventors/Applicants (for US only): **CHEIKY, Michael**
[US/US]; 1776 Eucalyptus Hill Road, Santa Barbara, CA
93103 (US). **HAGO, Wilson** [US/US]; 52 North Ash
Street, Ventura, CA 93001 (US).

Published:
— with international search report

[Continued on next page]

(54) Title: RECOMBINANT SEPARATOR



(57) Abstract: A heterogeneous, cellulose battery separator (10) made of a mixture of cellulose (12) and a polymer with hydrogen permeability for use in zinc-based batteries exhibiting increased hydrogen transport through the membrane while maintaining low electrical impedance and exhibiting resistance to zinc ion transport preventing zinc dendrite formation.



WO 02/086991 A1



— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

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.