

CORRECTED VERSION

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
26 October 2012 (26.10.2012)



(10) International Publication Number
WO 2012/145531 A8

- (51) International Patent Classification:
H01M 6/18 (2006.01)
- (21) International Application Number:
PCT/US2012/034285
- (22) International Filing Date:
19 April 2012 (19.04.2012)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
61/477,959 21 April 2011 (21.04.2011) 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, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, 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, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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(54) Title: ION CONDUCTIVE MULTILAYER STRUCTURE

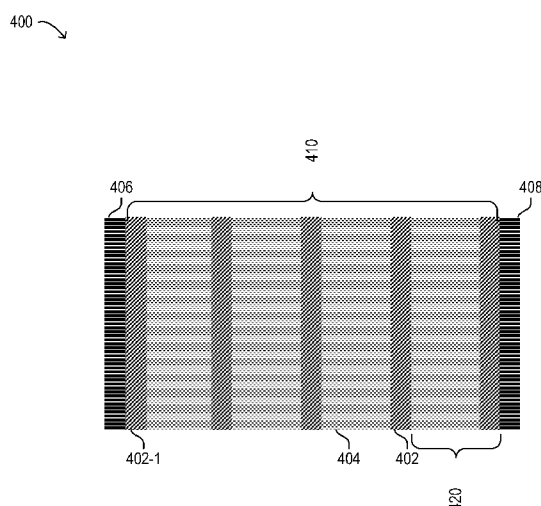


FIG. 4

(57) Abstract: A novel ion conductive material may be formed as a thin-film multilayered structure. The thin-film multilayered structure may be formed using multiple ion conductive sublayers of an electronic insulator and an ionic conductor. A nanometer-range thickness of the electronic insulator may be selected to provide desirable ion conductive properties that may be different from bulk material properties due to quantum size effects. The thin-film multilayered structure may behave in aggregate as an electronic insulator while behaving as an ion conductor at relatively low temperatures. The thin-film multilayered structure may be used as an electrolyte in a solid-oxide fuel cell (SOFC) for conduction of oxygen ions at relatively low temperatures, for example, less than about 600°C.



Published:

— *without international search report and to be republished
upon receipt of that report (Rule 48.2(g))*

(15) Information about Correction:

see Notice of 20 December 2012

(48) Date of publication of this corrected version:

20 December 2012