



(51) International Patent Classification:
C09K 11/85 (2006.01) *H01L 51/50* (2006.01)

(21) International Application Number:
PCT/US2009/069294

(22) International Filing Date:
22 December 2009 (22.12.2009)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/141,165 29 December 2008 (29.12.2008) US

(71) Applicant (for all designated States except US): SAINT-GOBAIN CERAMICS & PLASTICS, INC. [US/US];
One New Bond Street, Worcester, Massachusetts
01615-0138 (US).

(72) Inventors: MENGE, Peter, R.; 472 Greenhaven Drive,
Chagrin Falls, Ohio 44022 (US). WILSON, Lance, J.;
3387 Chalfont, Shaker Heights, Ohio 44120 (US).

(74) Agents: LARSON NEWMAN & ABEL, LLP et al.;
5914 West Courtyard Drive, Suite 200, Austin, Texas
78730 (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, 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, RO, RS, RU, SC, SD,
SE, SG, SK, SL, SM, ST, SV, SY, 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, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ,
TM), European (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, SE, SI, SK, SM,
TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
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))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

Published:

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

(54) Title: RARE-EARTH MATERIALS, SCINTILLATOR CRYSTALS, AND RUGGEDIZED SCINTILLATOR DEVICES INCORPORATING SUCH CRYSTALS

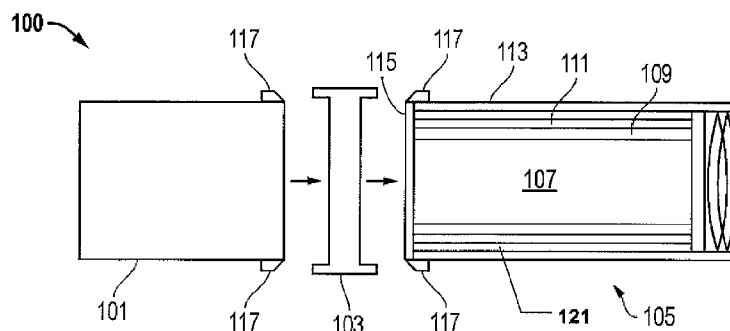


FIG. 1

(57) Abstract: A rare-earth halide material comprising a first surface region having a first surface roughness (R_{rms1}) and a second surface region having a second surface roughness (R_{rms2}), wherein the first surface roughness value is at least about 10% less than the second surface roughness value, wherein surface roughness is measured using scanning white light interferometry over an area of 1 mm².