

(51) International Patent Classification:
G01T 1/185 (2006.01) **G01N 27/62** (2006.01)(21) International Application Number:
PCT/US2010/057059(22) International Filing Date:
17 November 2010 (17.11.2010)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/262,305 18 November 2009 (18.11.2009) US(71) Applicant (for all designated States except US): **SAINT-GOBAIN CERAMICS & PLASTICS, INC.** [US/US];
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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, 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, 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).

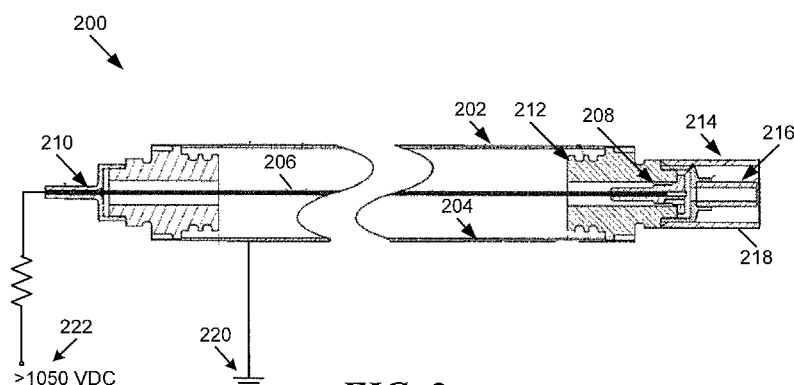
Declarations under Rule 4.17:

- 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: SYSTEM AND METHOD FOR IONIZING RADIATION DETECTION

**FIG. 2**

(57) Abstract: An ionizing radiation detection system can include a self-quenching sensing element having a substantially sealed enclosure containing a plurality of gases. The plurality of gases can include an ionizing gas to ionize in response to receiving a particle of ionizing radiation. The plurality of gases can also include a halogen quenching gas. In a particular embodiment, the plurality of gases can include an oxygen-containing gas in an amount of at least approximately 5 % by pressure of a total pressure of the plurality of gases. In another particular embodiment, the partial pressure of the oxygen-containing gas can be from approximately 2666 Pa to approximately 16000 Pa. In another embodiment, the radiation detection system can include an anode having a composition that is more resistant to erosion by gasses within the sensing element.