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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
10 July 2008 (10.07.2008)

PCT

(10) International Publication Number
WO 2008/083073 A1

(51) International Patent Classification:
C30B 29/20 (2006.01)

(21) International Application Number:
PCT/US2007/088550

(22) International Filing Date:
21 December 2007 (21.12.2007)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/882,343 28 December 2006 (28.12.2006) US

(71) Applicant *(for all designated States except US)*: **SAINT-GOBAIN CERAMICS & PLASTICS, INC.** [US/US]; One New Bond Street Box Number 15138, Worcester, Massachusetts 01615-0138 (US).

(72) Inventors; and

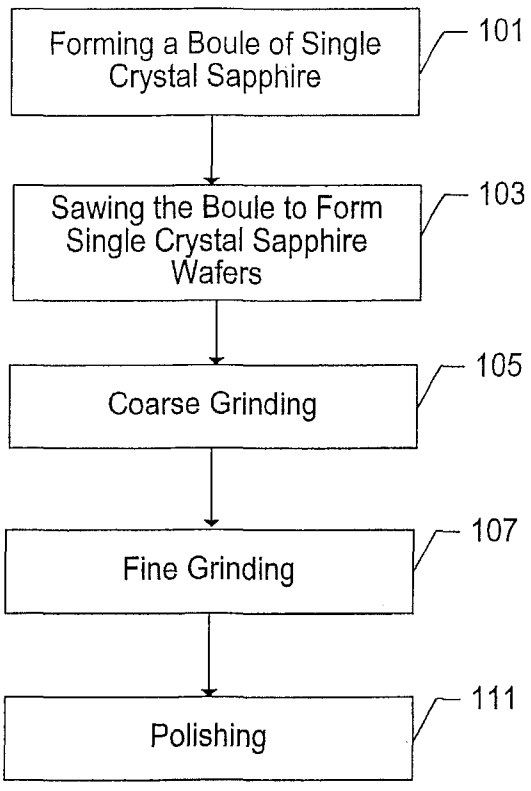
(75) Inventors/Applicants *(for US only)*: **TANIKELLA, Brahmanandam V.** [IN/US]; 117 Madison Road, Northboro, Massachusetts 01532 (US). **SIMPSON, Matthew A.** [AU/US]; 157 Maynard Farm Road, Sudbury, Massachusetts 01776 (US). **CHINNAKARUPPAN, Palaniappan** [IN/US]; 225 Janney Lane,, Springboro, OH 45066 (US). **RIZZUTO, Robert A.** [US/US]; 1093 W. Boylston Street, Worcester, Massachusetts 01606 (US). **CHERIAN, Isaac K.** [IN/US]; 49 Trowbridge Lane, Shrewsbury, Massachusetts 01545 (US). **VEDANTHAM, Ramanujam** [IN/US]; 15 Arrowsic Street, Worcester, Massachusetts 01606 (US).

(74) Agents: **BUJOLD, Michael J.** et al.; Davis Bujold & Daniels, P.L.L.C., 112 Pleasant Street, Concord, NH 03301 (US).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, 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, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

[Continued on next page]

(54) Title: SAPPHIRE SUBSTRATES AND METHODS OF MAKING SAME



(57) Abstract: A sapphire substrate includes a generally planar surface having a crystallographic orientation selected from the group consisting of a-plane, r-plane, m-plane, and c-plane orientations, and having a nTTV of not greater than about 0.037 $\mu m/cm^2$, wherein nTTV is total thickness variation normalized for surface area of the generally planar surface, the substrate having a diameter not less than about 9.0 cm.

WO 2008/083073 A1

(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, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, 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:

— *with international search report*