



(51) International Patent Classification:
G01N 21/64 (2006.01) **G01N 21/95** (2006.01)
G01N 21/94 (2006.01)

(21) International Application Number:
PCT/US2011/039028

(22) International Filing Date:
3 June 2011 (03.06.2011)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/351,791 4 June 2010 (04.06.2010) US

(71) Applicant (for all designated States except US): **HEMLOCK SEMICONDUCTOR CORPORATION**
[US/US]; 12334 Geddes Road, Hemlock, MI 48626 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **KRESZOWSKI, Doug** [US/US]; 1750 Coolidge, Saginaw, MI 48638 (US). **HADD, John, W.** [US/US]; 4409 Jameson Street, Saginaw, MI 48638 (US).

(74) Agents: **GARETTO, Janet** et al.; Nixon Peabody LLP, 300 S. Riverside Plaza, 16th Floor, Chicago, IL 60606 (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:

— of inventorship (Rule 4.17(iv))

Published:

— with international search report (Art. 21(3))

[Continued on next page]

(54) Title: A METHOD FOR MEASURING BULK IMPURITIES OF SEMICONDUCTOR MATERIALS USING EDGE - ON PHOTOLUMINESCENCE

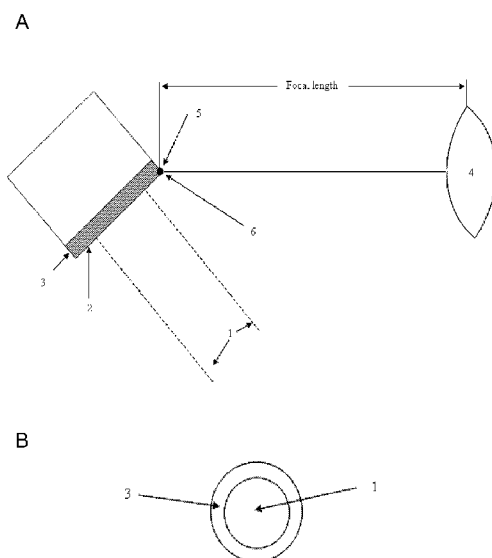


Figure 2

(57) Abstract: Provided are photoluminescence spectroscopy systems and methods for identifying and quantifying impurities in a semiconductor sample. In some embodiments, the systems and methods comprise a defocused collimated laser beam illuminating a first sample surface, and collection by a collection lens of photoluminescence from a sample edge at the intersection of the first surface with a substantially orthogonal second surface, wherein the first sample surface is oriented from about 0° to 90° with respect to a position parallel to the collection lens.



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

amendments (Rule 48.2(h))