

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

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
26 May 2006 (26.05.2006)

PCT

(10) International Publication Number
WO 2006/054952 A1

(51) International Patent Classification:

B82B 1/00 (2006.01) **C30B 29/46** (2006.01)
B82B 3/00 (2006.01)

(21) International Application Number:

PCT/SG2005/000382

(22) International Filing Date:

9 November 2005 (09.11.2005)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

60/629,478 19 November 2004 (19.11.2004) US

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(81) Designated States (unless otherwise indicated, for every kind of national protection available):

AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, 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, HU, IE, IS, IT, LT, LU, LV, MC, 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).

Declaration under Rule 4.17:

— of inventorship (Rule 4.17(iv))

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: PRODUCTION OF CORE/SHELL SEMICONDUCTOR NANOCRYSTALS IN AQUEOUS SOLUTIONS

(57) Abstract: The present invention relates to a method of forming a core/shell nanocrystal of semiconductor material. Typically the core may comprise CdTe and the shell may be CdS. The shell is synthesised on the core in an aqueous solution. In the method, the previously synthesised cores are placed in the aqueous solution, reactants that form the shell and a thiol such as 3-mercaptopropionic acid (MPA) are added, and the mixture is refluxed until the completion of the shell at the desired thickness. The synthesis of the shell is aided by the provision of an interface zone between the shell and core so that lattice mismatch between the core and shell is reduced. The interface zone may be produced using a method that provides a gradient alloyed core with increased levels of sulphur, for example, at the surface relative to the centre of the core. Alternatively the interface zone may be a separate layer on a homogenous core.

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