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(71) **Applicant** *(for all designated States except US)*: **NITTO DENKO CORPORATION** [JP/JP]; 1-1-2 Shimohozumi, Osaka, Ibaraki, 567-8680 (JP).

(72) **Inventors; and**

(75) **Inventors/Applicants** *(for US only)*: **FROEHLICH, Jesse, Dan** [US/US]; 1050 Meadow Lake Drive, Apt. #4, Vista, CA 92084 (US). **NAKAMURA, Toshitaka** [JP/US]; 3923 Mesa Dr. #203, Oceanside, CA 92056 (US). **MOCHIZUKI, Amane** [JP/US]; 12005 Avenida Sivrita, San Diego, CA 92128 (US). **LI, Sheng** [US/US]; 2075 Sequoia Crest, Vista, CA 92081 (US).

(74) **Agent**: **MALLON, Joseph, J.**; Knobbe Martens Olson & Bear LLP, 2040 Main Street, Fourteenth Floor, Irvine, CA 92614 (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, 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, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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

[Continued on next page]

(54) **Title**: NANOPARTICLE SYNTHESIS BY SOLVOTHERMAL PROCESS

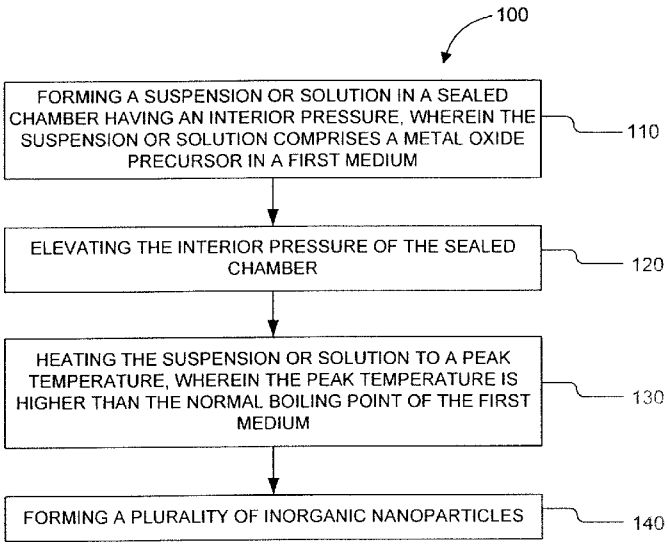

FIG. 1

(57) **Abstract**: A solvothermal process for making inorganic nanoparticles is described. Inorganic nanoparticles can be produced by forming a suspension or solution comprising at least one group II-IV and lanthanide metal inorganic salt in a first medium, disposing the suspension or solution in a sealed chamber having an interior pressure, elevating the interior pressure of the sealed chamber to an initial interior pressure prior to the heating, heating the suspension or solution to a peak temperature higher than the normal boiling point of the first medium, optionally adding a second medium to the suspension or solution after the heating. Also claimed are an optical film comprising a layer of YAG nanoparticles produced by the method and a white light emitting device comprising a Ce-doped YAG phosphor.

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— *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))*

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29 July 2010

INTERNATIONAL SEARCH REPORT

International application No
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A. CLASSIFICATION OF SUBJECT MATTER
INV. C01F17/00 C09K11/77
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
C01F C09K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, CHEM ABS Data, COMPENDEX

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	INOUE M ET AL: "Glycothermal synthesis of rare earth aluminium garnets" JOURNAL OF ALLOYS AND COMPOUNDS, ELSEVIER SEQUOIA, LAUSANNE, CH LNKD- DOI:10.1016/0925-8388(95)01632-5, vol. 226, 1 August 1995 (1995-08-01), pages 146-151, XP004072169 ISSN: 0925-8388 cited in the application	29-33
A	page 147, column 1 page 149, column 1	1-28

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[X] Further documents are listed in the continuation of Box C. [ ] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
26 May 2010	16/06/2010

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Gumann, Sina

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2009/033689

Box No. IV Text of the abstract (Continuation of item 5 of the first sheet)

A solvothermal process for making inorganic nanoparticles is described. Inorganic nanoparticles can be produced by forming a suspension or solution comprising at least one group II-IV and lanthanide metal inorganic salt in a first medium, disposing the suspension or solution in a sealed chamber having an interior pressure, elevating the interior pressure of the sealed chamber to an initial interior pressure prior to the heating, heating the suspension or solution to a peak temperature higher than the normal boiling point of the first medium, optionally adding a second medium to the suspension or solution after the heating. Also claimed are an optical film comprising a layer of YAG nanoparticles produced by the method and a white light emitting device comprising a Ce-doped YAG phosphor.

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2009/033689

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	KASUYA R ET AL: "Glycothermal synthesis and photoluminescence of YAG:Ce<3+> nanophosphors" JOURNAL OF ALLOYS AND COMPOUNDS, ELSEVIER SEQUOIA, LAUSANNE, CH LNKD- DOI:10.1016/J.JALLCOM.2005.01.066, vol. 408-412, 9 February 2006 (2006-02-09) , pages 820-823, XP025140269 ISSN: 0925-8388 [retrieved on 2006-02-09] cited in the application	29-33
A	page 821	1-28

X	KASUYA R ET AL: "Photoluminescence enhancement of PEG-modified YAG:Ce<3+> nanocrystal phosphor prepared by glycothermal method" JOURNAL OF PHYSICAL CHEMISTRY B 20051201 AMERICAN CHEMICAL SOCIETY US, vol. 109, no. 47, 1 December 2005 (2005-12-01), pages 22126-22130, XP002583768 DOI: DOI:10.1021/JP052753J cited in the application	29-33
A	page 22126, column 1 - page 22127, column 1	1-28

A	MASASHI INOUE ET AL: "Reaction of aluminium alkoxides with various glycols and the layer structure of their products" JOURNAL OF THE CHEMICAL SOCIETY, DALTON TRANSACTIONS, CHEMICAL SOCIETY. LETCHWORTH, GB LNKD- DOI:10.1039/DT991000333, 1 January 1991 (1991-01-01), pages 3331-3336, XP008122657 ISSN: 1472-7773 cited in the application	1,10-12, 22-24

X	KASUYA R ET AL: "Characteristic optical properties of transparent color conversion film prepared from YAG:Ce3+ nanoparticles" APPLIED PHYSICS LETTERS, AIP, AMERICAN INSTITUTE OF PHYSICS, MELVILLE, NY, US LNKD- DOI:10.1063/1.2785131, vol. 91, no. 11, 14 September 2007 (2007-09-14), pages 111916-111916, XP012099134 ISSN: 0003-6951 the whole document	29-32

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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2009/033689

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	MASASHI INOUE ET AL: "Glycothermal synthesis of metal oxides" JOURNAL OF PHYSICS: CONDENSED MATTER, INSTITUTE OF PHYSICS PUBLISHING, BRISTOL, GB LNKD- DOI:10.1088/0953-8984/16/14/042, vol. 16, no. 14, 14 April 2004 (2004-04-14), pages S1291-S1303, XP020059410 ISSN: 0953-8984	1-33