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[Continued on nextpage]

(54) Title: PROCESS FOR PRODUCING A METAL NANOPARTICLE COMPOSITION

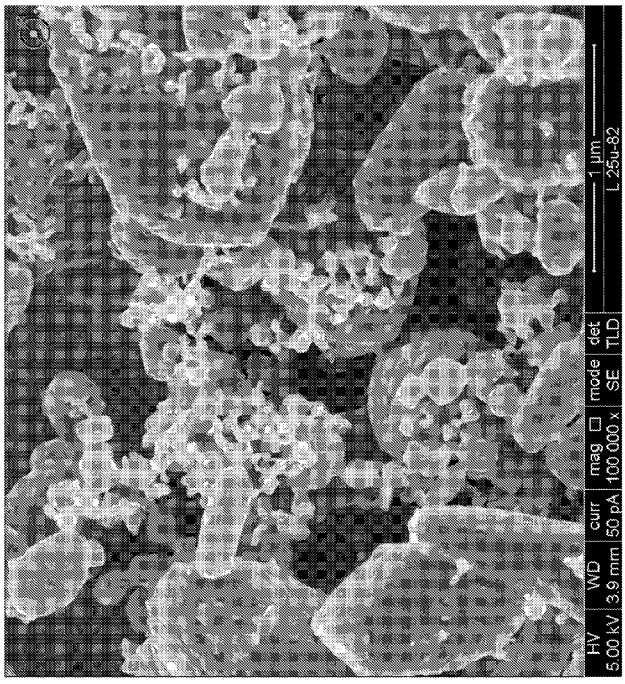

FIG. 1

(57) Abstract: A method for producing a metal nanoparticle composition including: (a) providing an alloy that includes silver and aluminum; (b) subjecting the alloy to a first thermal treatment to form a thermally treated alloy; (c) cold working the thermally treated alloy to form strips or pellets comprising the alloy; (d) subjecting the strips or pellets to a second thermal treatment at a temperature less than 440°C to form thermally treated strips or pellets; (e) subjecting the thermally treated strips or pellets to a leaching agent effective to leach out a portion of the aluminum and form a metal nanoparticle composition comprising metal nanoparticles; and (f) washing, filtering, and then drying the metal nanoparticle composition.

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Declarations under Rule 4.17:

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(H))*

— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(Hi))*

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INTERNATIONAL SEARCH REPORT

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PCT/IB 14/64441

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - B22F 9/04, 1/02; H05K 1/09 (2015.01)
CPC - B22F 9/04, 1/02; H05K 1/097
According to International Paient Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
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CPC: B22F 9/04, 1/02; Y10S 977/773, 977/775; B82Y 30/00. 40/00; H05K 1/097

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 practicable, search terms used)
PatSeer (US, EP, WO, JP, DE, GB, CN, FR, KR, ES, AU, IN, CA, INPADOC Data); ProQuest; IP.com; Google/Google Scholar; silver, Ag, aluminum, Al, nanoparticle, nanoparticulale, nanopowder, alloy, leach, etch, dissolve, extract, dealloy, thermal, heat, temperature, cold work, pulverize, grind, mill, compress, base, acid, hydroxide, coaf, de-agglomerate, photovoltaic cell, passivation, self-assemble

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category"	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 7,544,229 B2 (GARBAR, A et al.) 09 June 2009; abstract; column 2, lines 28-34; column 3, lines 9-15; claims 11-12. 16	1-19
Y	US 3,147,111 A (FOERSTER, GS) 01 September 1964; column 1, lines 52-55; column 3, lines 55-67; claim 3	1-14
Y	CHEN, SJ et al. Synthesis and characterization of single-phase nanocrystalline Ag2Al particles. Transactions of Nonferrous Metals Society of China. January 2012, Vol. 22, No. 1, page 135.	7-10, 15-19
Y	US 2011/0175065 A1 (DE LA VEGA, F et al.) 21 July 2011; abstract; paragraphs [0008], [0015], [0067]; claim 20	19
Y	US 7,833,808 B2 (XU, B et al.) 16 November 2010; column 3, lines 23-27; column 7, lines 58-64; column 13, lines 56-59; claim 1	19
A	US 5,476,535 A (KHASIN, E et al.) 19 December 1995; entire document	1-19
A	US 2010/0032615 A1 (LEE, II, Y et al.) 11 February 2010; entire document	1-19
A	SONG, T et al. Dealloying behavior of rapidly solidified Al-Ag alloys to prepare nanoporous Ag in inorganic and organic acidic media. CrystEngComm. December 2011. Vol. 13. No. 23. pages 7058-7067	1-19

☐ Further documents are listed in the continuation of Box C. ☐ See paient family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
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