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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
9 October 2014 (09.10.2014)

WIPO | PCT

(10) International Publication Number
WO 2014/162308 A2

(51) International Patent Classification:
B22F 1/00 (2006.01)

(21) International Application Number:
PCT/IB2014/062831

(22) International Filing Date:
3 July 2014 (03.07.2014)

(25) Filing Language: Polish

(26) Publication Language: English

(30) Priority Data:
P.407178 14 February 2014 (14.02.2014) PL

(71) Applicant: **UNIWERSYTET WARSZAWSKI** [PL/PL]; Krakowskie Przedmiescie 26/28, PL-00-927 Warszawa (PL).

(72) Inventors: **LEWERA, Adam**; Sonaty 6c/6, PL-02-744 Warszawa (PL). **JURCZAKOWSKI, Rafal**; Kepinska 16, PL-05-840 Brwinow (PL). **PIWOWAR, Justyna**; Platnerska 2a/46, PL-04-473 Warszawa (PL). **MIELCAREK, Barbara**; Lesna 13, PL-27-530 Ozarow (PL).

(74) Agent: **TAGOWSKA, Magdalena**; Patpol Kancelaria Patentowa Sp. z o.o., Nowursynowska 162J, PL-02-776 Warszawa (PL).

(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, BN, 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, IR, IS, JP, KE, KG, 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, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, 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, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, 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, KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— *as to the identity of the inventor (Rule 4.17(i))*

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

— *of inventorship (Rule 4.17(iv))*

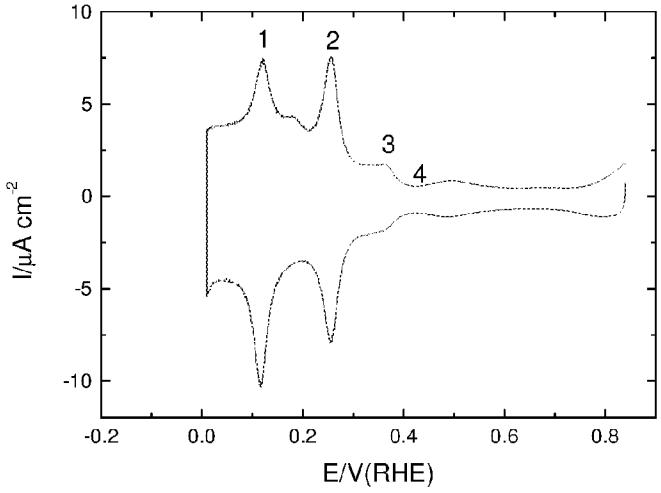
Published:

— *upon request of the applicant, before the expiration of the time limit referred to in Article 21(2)(a)*

[Continued on next page]

(54) Title: A METHOD OF PREPARING PURE PRECIOUS METAL NANOPARTICLES WITH LARGE FRACTION OF (100) FACETS, NANOPARTICLES OBTAINED BY THIS METHOD AND THEIR USE

Fig. 1



(57) Abstract: The invention provides a method of preparing pure precious metal nanoparticles of controlled sizes and having (100) facets, wherein a precursor substance contained in a reagent solution is subjected to a reduction reaction using a reducing agent contained in the reagent solution to provide nanoparticles, and the reduction reaction is stopped by rapid lowering of the reaction solution temperature. In the process of the invention, the need to use surfactants or other organic particles to stabilize the (100) facets is eliminated.

WO 2014/162308 A2

— *without international search report and to be republished upon receipt of that report (Rule 48.2(g))*