



(51) International Patent Classification:

B01J 23/42 (2006.01) *B01J 23/46* (2006.01)
B01J 23/52 (2006.01) *B01J 23/74* (2006.01)
B01J 23/44 (2006.01) *H01M 4/88* (2006.01)

(21) International Application Number:

PCT/SG2013/000168

(22) International Filing Date:

26 April 2013 (26.04.2013)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

201203111-8 26 April 2012 (26.04.2012) SG

(71) Applicant: AGENCY FOR SCIENCE, TECHNOLOGY
AND RESEARCH [SG/SG]; 1 Fusionopolis Way, #20-10
Connexis, Singapore 138632 (SG).(72) Inventors: YING, Jackie, Y; c/o Institute of Bioengineering
and Nanotechnology, 31 Biopolis Way, #04-01 Nanos,
Singapore 138669 (SG). YANG, Jinhua; c/o Institute of
Bioengineering and Nanotechnology, 31 Biopolis Way,

#04-01 Nanos, Singapore 138669 (SG). CHEN, Xiaojun;
c/o Institute of Bioengineering and Nanotechnology, 31 Bi-
opolis Way, #04-01 Nanos, Singapore 138669 (SG).

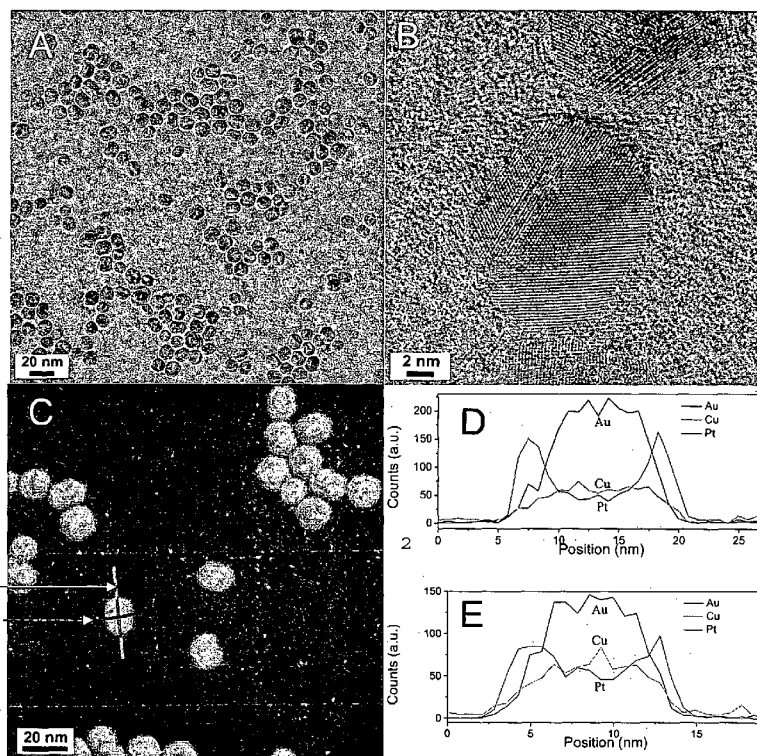
(74) Agent: SPRUSON & FERGUSON (ASIA) PTE LTD;
P.O. Box 1531, Robinson Road Post Office, Singapore
903031 (SG).

(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, 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, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU,
RW, 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,

[Continued on next page]

(54) Title: A PARTICLE EXHIBITING CATALYTIC ACTIVITY



(57) Abstract: A particle exhibiting catalytic activity comprising (a) an inner core formed of an alloy material; and (b) an outer shell formed of a metal material surrounding the inner core, wherein the alloy material is selected such that the inner core exerts a compressive strain on the outer shell.



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, 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))*