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[Continued on next page]

(54) Title: METHOD OF MAKING A METALLIC COMPOSITE AND USE THEREOF

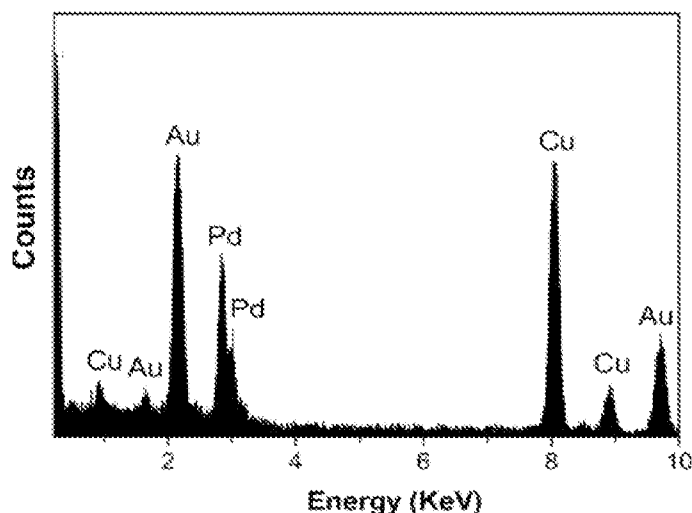


FIG. 3

(57) Abstract: Disclosed herein are embodiments of a metallic composite that is made using embodiments of a facile, efficient method. Certain embodiments of the disclosed method of making the composite can comprise a one-step, room temperature synthetic procedure, and other embodiments can comprise a two-step synthetic procedure. Also disclosed herein are embodiments of a method of using the disclosed composite, such as for fluid purification via contaminant degradation, or in biological sensor applications.



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A. CLASSIFICATION OF SUBJECT MATTER**B01J 20/30(2006.01)i, B01J 20/32(2006.01)i, B01J 20/02(2006.01)i, B01D 15/00(2006.01)i**

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)

B01J 20/30; H05B 6/00; A61M 37/00; B01J 23/52; B01J 23/44; B01J 20/32; B01J 20/02; B01D 15/00

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

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & keywords: Catalyst, TCE, TNT, Pd, Au, precursor, composite, heterostructure, alloy, solid support material**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WANG, RUIYI et al., 'Graphene-supported Au-Pd bimetallic nanoparticles with excellent catalytic performance in selective oxidation of methanol to methyl formate,' Chemical Communications, 16 July 2013 (Online), vol. 49, pp. 8250-8252 with supplementary information (26 pages) See pages 8251, right column, lines 2, 3; figure 1; table 1; and pages 1, 2 in supplementary information.	1-16, 19, 20, 23, 24, 28
A		17, 18, 21, 22, 25-27, 29-34
X	MAZUMDER, VISMADÉB et al., "Synthesis and characterization of multimetallic Pd/Au and Pd/Au/FePt core/shell nanoparticles," Angewandte Chemie International Edition, 17 September 2010 (Online), vol. 49, pp.9368-9372 See figure 1; page 9371, left column, lines 10-12; and Experimental Section.	24-27
X	NUTT, MICHAEL O, et al., 'Improved Pd-on-Au bimetallic nanoparticle catalysts for aqueous-phase trichloroethene hydrodechlorination,' Applied Catalysis, 17 July 2006 (Online), vol. 69, pp. 115-125 See abstract; pages 116-122; and table 2.	29-34



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

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2014/063747

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	LI, FEIHUI et al., 'A facile method to synthesize supported Pd-Au nanoparticles using graphene oxide as the reductant and their extremely high electrocatalytic activity for the electrooxidation of methanol and ethanol,' Journal of Materials Chemistry A, 5 April 2013 (Online), vol. 1, pp. 6579-6587 See abstract; pages 6580.	1-16, 19, 20, 23, 24, 28
X	WANG, ZHI-LI et al., 'Au@Pd core-shell nanoclusters growing on nitrogen-doped mildly reduced graphene oxide with enhanced catalytic performance for hydrogen generation from formic acid,' Journal of Materials Chemistry A, 29 August 2013 (Online), vol. 1, pp. 12721-12725 See abstract; and pages 12721, 12722, 12724.	1-14, 19, 23
A	US 2012-0265122 A1 (EL-SHALL, M. SAMY et al.) 18 October 2012 See abstract; paragraphs [0067]-[0073], [0156]-[0160]; and claims 1-9.	1-34
A	CN 102773097 A (EAST CHINA UNIVERSITY OF SCIENCE AND TECHNOLOGY) 14 November 2012 See abstract; and paragraphs [0006]-[0026].	1-34
A	US 2010-0261603 A1 (HAGEMEYER, ALFRED et al.) 14 October 2010 See abstract; and paragraphs [0024]-[0026], [0032]-[0034], [0053], [0070]-[0091].	1-34

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2014/063747

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