

Accepted Manuscript

Nanoporous gold: Preparation and applications to catalysis and sensors

Sang Hoon Kim

PII: S1567-1739(18)30082-8

DOI: [10.1016/j.cap.2018.03.021](https://doi.org/10.1016/j.cap.2018.03.021)

Reference: CAP 4715

To appear in: *Current Applied Physics*

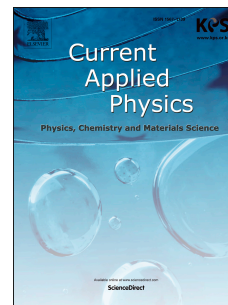
Received Date: 19 February 2018

Revised Date: 26 March 2018

Accepted Date: 27 March 2018

Please cite this article as: S.H. Kim, Nanoporous gold: Preparation and applications to catalysis and sensors, *Current Applied Physics* (2018), doi: 10.1016/j.cap.2018.03.021.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Nanoporous gold: preparation and applications to catalysis and sensors

Sang Hoon Kim*

Materials Architecturing Research Center, Korea Institute of Science and Technology, Seoul,
02792, Korea

and

Division of Nano & Information Technology in KIST School, University of Science and
Technology, Daejeon, 34113, Korea

*E-mail address: kim_sh@kist.re.kr, Tel : +82-02-958-5426, Fax : +82-02-958-5391

Abstract

Preparation and applications of nanoporous gold (NPG) was reviewed. Various preparation methods of NPG and its structure were first discussed. Then, two basic characterization methods for morphology and surface area of prepared NPG structures were discussed. As for applications of NPG, studies regarding catalysts and sensors were surveyed. First, for catalysis, CO oxidation and hydrogen oxidation were reviewed. Regarding CO oxidation, detailed studies on reaction mechanisms and density functional theory (DFT) calculations were also discussed. For hydrogen oxidation, the effect of adding metal oxide nanoparticles on NPG was discussed. As for sensor applications, non-enzymatic and amperometric electrochemical sensing of aniline and phenol were reviewed. Due to its nanostructures, NPG had superior properties of antifouling effect and enhanced response signals and good enough stability that enabled amperometric sensing.

Keywords: Nanoporous Gold, Catalysis, Sensor

Download English Version:

<https://daneshyari.com/en/article/8147679>

Download Persian Version:

<https://daneshyari.com/article/8147679>

[Daneshyari.com](https://daneshyari.com)