

Accepted Manuscript

Sonochemical synthesis of SrMnO_3 nanoparticles as an efficient and new catalyst for O_2 evolution from water splitting reaction

Sousan Gholamrezaei, Masoud Salavati-Niasari

PII: S1350-4177(17)30366-8

DOI: <http://dx.doi.org/10.1016/j.ultsonch.2017.08.012>

Reference: ULTSON 3817

To appear in: *Ultrasonics Sonochemistry*

Received Date: 8 July 2017

Revised Date: 11 August 2017

Accepted Date: 12 August 2017



Please cite this article as: S. Gholamrezaei, M. Salavati-Niasari, Sonochemical synthesis of SrMnO_3 nanoparticles as an efficient and new catalyst for O_2 evolution from water splitting reaction, *Ultrasonics Sonochemistry* (2017), doi: <http://dx.doi.org/10.1016/j.ultsonch.2017.08.012>

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.

Sonochemical synthesis of SrMnO_3 nanoparticles as an efficient and new catalyst for O_2 evolution from water splitting reaction

Sousan Gholamrezaei, Masoud Salavati-Niasari*

Institute of Nano Science and Nano Technology, University of Kashan, Kashan, P. O. Box. 87317-51167, I. R. Iran.

**Corresponding author: Tel.: +98 31 5591 2383, Fax: +98 31 55913201.*

E-mail address: salavati@kashanu.ac.ir

Abstract

The principal focus of this investigation is to prepare the SrMnO_3 nanostructures by different chemical methods such as ultrasonic, co-precipitation, microwave, and hydrothermal methods. The influence of calcination temperature, and ultrasound irradiation power, and the presence of surfactant investigated on morphology and size of SrMnO_3 nanostructures. As-prepared nanoparticles were characterized by X-ray diffraction (XRD), scanning electron microscope (SEM), transmission electron microscopy (TEM), Fourier transform infrared spectroscopy (FT-IR), X-ray energy dispersive spectroscopy (EDS) and ultraviolet-visible (UV-Vis) spectroscopy. The results indicated that by changing in method and reaction condition, product appeared in different size, morphology, and uniformity. The morphology and size of nanostructures have been influenced on the properties of nano- SrMnO_3 . For investigation of properties, the SrMnO_3 was used in catalytic water splitting for O_2 evolution in presence of $(\text{NH}_4)_2\text{Ce}(\text{NO}_3)_6$. The effect of nano-catalysts and the concentration of $(\text{NH}_4)_2\text{Ce}(\text{NO}_3)_6$ have been studied on O_2 evolution reaction. Results show that the efficiency of water splitting increased by enhancement in the size and uniformity of catalysts and introduced the SrMnO_3 as a new and efficient catalyst for O_2 evolution reaction.

Key words: Nanostructures; Chemical synthesis; Catalytic properties; Water splitting; O_2 evolution reaction.

Download English Version:

<https://daneshyari.com/en/article/5144491>

Download Persian Version:

<https://daneshyari.com/article/5144491>

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