

## Accepted Manuscript

Synthesis and multifunctionality of (CeO<sub>2</sub>-NiO) nanocomposites via sonochemical technique

A.A. Farghali, M.H. Khedr, S.I. El-Dek, A.E. Megahed

PII: S1350-4177(17)30578-3

DOI: <https://doi.org/10.1016/j.ultsonch.2017.12.011>

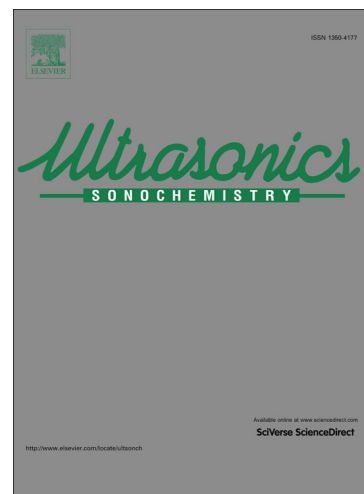
Reference: ULTSON 3995

To appear in: *Ultrasonics Sonochemistry*

Received Date: 1 September 2017

Revised Date: 5 December 2017

Accepted Date: 6 December 2017



Please cite this article as: A.A. Farghali, M.H. Khedr, S.I. El-Dek, A.E. Megahed, Synthesis and multifunctionality of (CeO<sub>2</sub>-NiO) nanocomposites via sonochemical technique, *Ultrasonics Sonochemistry* (2017), doi: <https://doi.org/10.1016/j.ultsonch.2017.12.011>

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.

**Synthesis and multifunctionality of (CeO<sub>2</sub>-NiO) nanocomposites  
via sonochemical technique**

A.A.Farghali<sup>a</sup>, M.H.Khedr<sup>a,b</sup>, S.I.El-Dek<sup>a</sup> and A.E.Megahed<sup>b</sup>

<sup>a</sup> Materials Science and Nanotechnology Department, Faculty of Post Graduated Studies for Advanced Sciences (PSAS), Beni- Suef University, Beni-Suef 62511, Egypt.

<sup>b</sup> Chemistry Department, Faculty of Science, Beni- Suef University, Beni-Suef 62511, Egypt.

**Abstract**

CeO<sub>2</sub>, NiO and their nanocomposite were synthesized using facile sonochemical technique. XRD assure single phase CeO<sub>2</sub> and NiO while the nanocomposite consists of the two phases only. CeO<sub>2</sub> nanoparticles possess cubic shape, NiO was formed in nanorods, and CeO<sub>2</sub> decorated the NiO nanorods in the nanocomposite. The magnetic behavior of the nanocomposite lies between those of the two parents with a ferromagnetic tendency. Metal oxide nanoparticles acted as catalyst in the formation of carbon nanofibers (CNFs), while the nanocomposite leads to the production of carbon nanotubes. The photocatalyst (CeO<sub>2</sub>-NiO) achieved complete dye degradation (100%) in light for the tested dye at 50 min. The decay products were analyzed using GC mass confirming mineralization of Bb red dye.

**Keywords:** nanorods; nanocomposite; water remediation; magnetic; photocatalysis.

---

**Corresponding author:**

**S.I.El-dek: Tel: +201029200873; [samaa@psas.bsu.edu.eg](mailto:samaa@psas.bsu.edu.eg)**

Download English Version:

<https://daneshyari.com/en/article/7703344>

Download Persian Version:

<https://daneshyari.com/article/7703344>

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