



**2nd International Conference on
Ultrafine Grained and Nanostructured Materials
Center of Excellence For High Performance Materials
School of Metallurgy and Materials Engineering
University College of Engineering, University of Tehran
Tehran, Iran. 14-15 Nov. 2009**

**CHARACTERIZATION OF NICKEL OXIDE NANOPARTICLES
SYNTHESIZED VIA RAPID MICROWAVE-ASSISTED ROUTE**

D. MOHAMMADYANI

*Materials and Energy Research Center
P.O. Box 14155-4777, Tehran, 1516953715, Iran
d.mohammadyani@gmail.com*

S.A. HOSSEINI

*Materials and Energy Research Center
P.O. Box 14155-4777, Tehran, 1516953715, Iran
a_hoseini@alum.sharif.ir*

S.K. SADRNEZHAAD[†]

*Materials and Energy Research Center, P.O. Box 14155-4777, Tehran, 1516953715, Iran
Department of Materials Science and Engineering, Sharif University of Technology, Tehran, 11365, Iran
sadrnezh@sharif.edu*

Received 30 September 2009

Revised Day Month Day

Nickel oxide (NiO) nanoparticles were produced via a rapid microwave-assisted method. Ni(OH)₂ precursor was obtained by slow drop-wise addition of 0.1 M sodium hydroxide (NaOH) to 0.1 M nickel nitrate Ni(NO₃)₂. The mixture was vigorously stirred until the pH reached 7.2. Application of microwave to the mixture then intensified the Ni(OH)₂ precipitation rate. By drying of the precipitate at 320°C, NiO nanopowder was produced. Transmission and scanning electron microscope (TEM & SEM) images showed that the synthesized NiO nanopowder had dimensions of ~30 nm. X-ray diffraction patterns revealed that the product had a well-crystallized/high-purity nanostructure. Utilization of microwave resulted in increasing of the homogeneity and decreasing of the particle size of the produced nickel oxide.

Keywords: Nickel oxide; microwave-assisted route; nanopowder; characterization.

[†]Corresponding author. Tel: +98 21 88771626.
Email address: sadrnezh@sharif.edu, sadrnezh@yahoo.com