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Synthesis and characterization of thin shell hollow sphere NiO nanopowder via ultrasonic technique

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Abstract

Hollow interior nanomaterials have received growing interest due to their peculiar and fascinating application potentials in photonic devices, drug delivery, ionic intercalation, nanocatalysts and membrane nanoreactors. For such purpose, the development of novel and simple techniques is in great demand for raising these materials to an industrial level. In this letter, we report a novel strategy for the synthesis of NiO hollow-spheres via ultrasonic technique by using tetrabutyl ammonium bromide (TBAB) for the first time. The morphology and structure of the prepared hollow nanospheres were studied using x-ray diffraction, high resolution transmission electron microscopy, selected area of electron diffraction and energy dispersive x-ray spectroscopy. The results depicted that highly pure and single crystalline monodisperse NiO hollow spheres with average diameter 12 nm and shell thickness 1.4 nm are successfully obtained. (C) 2012 Elsevier B.V. All rights reserved.

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