دانشگاه محقق اردبیلی

11th Iranian Physical Chemistry Seminar
University of Mohaghegh Ardabili, July 21-24, 2008

باسمه تعالی

فرهیخته ارجمند سرکار خانم الهه گوهرشادی

بدین وسیله از حضور ارزشمند جنابعالی در یازدهمین سمینار شیمی فیزیک ایران و ارائه مقاله با عنوان

Green Synthesis and Characterization of ZnO Nanostructures

قدردانی و تشکر می نماییم. امید است سربلندی شما را در عرصه های علم و زندگی از خداوند بزرگ خواهانیم.

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رئیس کمیته شیمی فیزیک انجمن شیمی ایران

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Green Synthesis and Characterization of ZnO Nanostructures

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1. Introduction

Room temperature ionic liquids are receiving much attention as environmentally benign solvents for organic chemical reactions,separations, and for electrochemical applications [1-5]. Room temperature ionic liquids (RTILs) have aroused increasing interest worldwide due to their high fluidity, low melting temperature and extended temperature range in the liquid state, air and water stability, low toxicity, nonflammability, high ionic conductivity, ability to dissolve a variety of materials, and importantly no measurable vapor pressure [6-8]. The negative environmental and safety problems arising from the use of volatile organic solvents can be avoided by using RTILs. Because of the above reasons, RTILs are actively being explored as possible "green" solvents [9] to substitute conventional volatile organic solvents in a variety of processes, including industrially important chemical processes [10–12]. They also offer fascinating possibilities for fundamental studies of their effects on chemical reactions and synthetic processes [13-15].

ZnO nanoparticles are one of the most important functional oxides with direct wide band gap (3.37eV) and large excitation binding energy (60 meV), exhibiting many interesting electrical and optical properties [16–18]. It is a versatile smart material that has unique applications in catalysts, sensors, piezoelectric transducers and actuators, photovoltaic, and surface acoustic wave devices [19-21].

2. The aim and method of research

The purpose of this work is to report the synthesis of ZnO nanoparticles via microwave in two RTILs. To explore the growth mechanism, the samples have been prepared using different irradiation times Cetyltrimethylammonium bromide (CTAB) has been also used as the capping reagent in order to investigate its role on the morphology and size of the produced ZnO nanoparticles.

The structure and morphology of the products were characterized by x-ray diffraction (XRD) (D8 Advanced), scanning electron microscope (SEM) (LEO 1530 FEGSEM), and transmission electron microscopy (TEM) (Philips/FEI CM200, 200 kV).

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