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SYNTHESIS AND COMPARATIVE STUDY OF NANO ZINC OXIDE STRUCTURES WITH AND WITHOUT CETYLTRIMETHYLAMMONIUM BROMIDE USING SOL-GEL METHOD

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Abstract and figures

In this research article, we have done comparative study of synthesis of ZnO nanoparticles without using cetyltrimethylammonium bromide (CTAB) and using cetyltrimethylammonium bromide (CTAB) by sol-gel method in aqueous medium as an environmentally benign method in structure directing agents. Sol-gel method is the very simple method and has the capability to regulate the particle size and morphology through systematic monitoring of reaction parameters. The surfactant effect on the systematic arrangement of the ZnO crystals was studied by scanning electron microscopy (SEM) and transmission electron microscopy (TEM) techniques. To study the probable changes in other properties of ZnO, characterizations like X-ray diffraction (XRD), Fourier transfer infrared spectroscopy (FT-IR) and UV-visible spectroscopy analysis were studied and discussed.



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SYNTHESIS AND COMPARATIVE STUDY OF NANO ZINC OXIDE STRUCTURES WITH AND WITHOUT CETYLTRIMETHYLAMMONIUM BROMIDE USING SOL-GEL METHOD

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Abstract

In this research article, we have done comparative study of synthesis of ZnO nanoparticle without using cetyltrimethylammonium bromide (CTAB) and using cetyltrimethylammonium bromide (CTAB) by sol-gel method in aqueous medium as an environmentally friendly method in structure directing agents. Sol-gel method is the very simple method and has the capability to regulate the particle size and morphology through systematic monitoring of reaction parameters. The surfactant effect on the systematic arrangement of the ZnO crystals was studied by scanning electron microscopy (SEM) and transmission electron microscopy (TEM) techniques. To study the probable changes in other properties of ZnO crystals, characterizations like X-ray diffraction (XRD), Fourier transform infrared spectroscopy (FTIR) and UV-visible spectroscopy analysis were studied and discussed.

Keyword: ZnO nano particles, Sol-gel method, CTAB, aqueous medium.

Introduction

Zinc oxide (ZnO) is a multipurpose material. Nano sized ZnO crystals have attracted a great deal of attention because of their size-dependent optoelectronic properties. A chemical synthesis of nano-sized ZnO crystals in aqueous solution, which was suitable for a large scale production, has been developed¹.



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