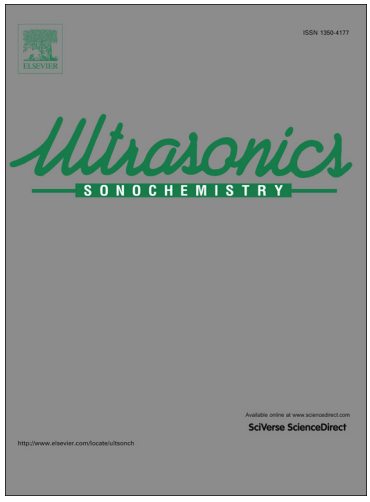

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Ultrasonic-Assisted Synthesis of Nano Lead(II) Coordination Polymer as Precursors for Preparation of Lead(II) Oxide Nano-Structures: Thermal, Optical Properties and XRD Studies

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Abstract

Nano structure of a lead (II) coordination polymer $[Pb_2(C_2Cl_3O_2)_2(NO_3)_2(C_{l2}H_8N_2)_2]_n$ (**1**), has been synthesized by a sonochemical method in different concentrations. The nano particles were characterized by scanning electron microscopy (SEM) X-ray powder diffraction (XRD), FT-IR spectroscopy and elemental analyses. The thermal stability of nano structure is closely investigated via thermal gravimetric (TGA), and compared with crystalline structure. The compounds are then heated to 600 °C to produce PbO nano particles. The resulting PbO is characterized through XRD and SEM analyses. Concentration of initial reagents effects on size and morphology of nano-structured compound **1** have been studied and show that low concentrations of initial reagents decreased particles size and leaded to uniform nano particles morphology. The photoluminescence properties of the prepared compound, as crystalline and as nanoparticles, have been investigated. The result showed a good correlation between the size and emission wavelength.

Keywords: Nano structure, Lead (II), Coordination polymer, Sonochemical