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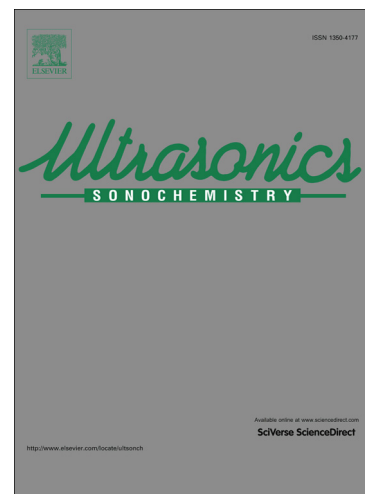
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Sonochemical synthesis and characterization of microrod to nanoparticle of new mixed-ligand zinc(II) fumarate metal-organic polymer

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Abstract

Micro and nano-structures of a new mixed-ligand Zn(II) fumarate metal-organic polymer, $\{[\text{Zn}(\text{tptz})(\text{fum})].\text{DMF}\}_n$ (**1**), (tptz = 2,4,6-tris(2-pyridyl)-s-triazine, fum = fumarate, DMF = N,N-dimethylformamide), were synthesized by sonochemical method. These new micro and nano-structures were characterized by scanning electron microscopy (SEM), X-ray diffraction (XRD), IR spectroscopy and elemental analyses. Compound **1** was structurally characterized by single-crystal X-ray diffraction and consists of the primary unit of $[\text{Zn}(\text{tptz})(\text{fum})]$. Self assembly between the units of $[\text{Zn}(\text{tptz})(\text{fum})]$ from Zn-O bonds results in the formation of a one-dimensional zinc(II) coordination polymer. The Zn^{II} -ion in compound **1** has ZnO_2N_3 coordination sphere with a trigonal bipyramidal molecular geometry. Compound **1** was synthesized by ultrasound irradiation under different concentrations and times. The microrods structure of compound **1** with increasing of concentration and ultrasound radiation time were synthesized as nanoparticles structure successfully. So ultrasound radiation change morphology from microrods to nanoparticles.

Keywords: metal-organic polymer; Mixed-ligand; Microrod; Nanoparticle; Sonochemical

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