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Ultrasonic assisted synthesis of a new one-dimensional nanostructured Mn(II) coordination polymer derived from azide and new multi-topic nitrogen donor ligand

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Abstract

A new Mn(II) coordination polymer, $[Mn(L_1)_2(N_3)_2]_n$ (**1**), L_1= 3,4-bis(4-pyridyl)-5-(2-pyridyl)-1,2,4-triazole, was synthesized by the reaction of ligand L_1 and mixtures of manganese(II) acetate and sodium azide via branched tube method. Compound **1** was structurally characterized by single-crystal X-ray diffraction. The results show that **1** is a 1D helix coordination polymer. Also nanostructures of **1** have been prepareded by sonochemical process at ambient temperature. The effects of two different concentrations of initial reagents on the size and morphology of the nanoparticles were studied and the products were characterized by X-ray powder diffraction and scanning electron microscopy (SEM). Also the comparison of the thermal stability of bulk form and nanoparticles of **1** was investigated by thermal gravimetric and differential thermal analyses.

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Keywords: Manganese(II) coordination polymer; Nano-structure; Sonochemical process.

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