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Sonochemical Synthesis of A Novel Nanoscale 1D Lead(II) $[Pb_2(L)_2(I)_4]_n$ Coordination Polymer and Survey of Temperature and Reaction Time Parameters

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Abstract

One new lead(II) coordination supramolecular complex (CSC) (1D), $[Pb_2(L)_2(I)_4]_n$, L= $C_4H_6N_2$ (1-methyl imidazole), has been synthesized under different experimental conditions. Micrometric crystals (bulk) or nano-sized materials have been obtained depending on using the branch tube method or sonochemical irradiation. All materials have been characterized by scanning electron microscopy (SEM), powder X-ray diffraction (PXRD) and FT-IR spectroscopy. Single crystal X-ray analyses on complex **1** showed that Pb^{2+} ion is 4-coordinated. Topological analysis shows that the complex **1** is 2,3,5C2 net. Finally, the role of reaction time and temperature on the growth and final morphology of the structures obtained by sonochemical irradiation have been studied.

Keywords: Coordination polymer, Sonochemical process, Ultrasound irradiation, Morphology.