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Title:	Synthesis, structural characterization, and solution properties of a 1-D Pb(II)-bipyridine coordination polymer
Authors:	Dey, D. (/jspui/browse?type=author&value=Dey%2C+D.) Yadav, H.R. (/jspui/browse?type=author&value=Yadav%2C+H.R.) Choudhury, A.R. (/jspui/browse?type=author&value=Choudhury%2C+A.R.)
Keywords:	1-D polymer Pb(II) Spectroscopic investigation Supramolecular interactions
Issue Date:	2015
Publisher:	Taylor and Francis Ltd.
Citation:	Journal of Coordination Chemistry, 68(1) pp. 169-180
Abstract:	A new one-dimensional (1-D) Pb(II) coordination polymer, [Pb(2,2'-bpy)(NO ₃) ₂ (H ₂ O)] _n (1) (2,2'-bpy = 2,2'-bipyridine), has been synthesized and characterized by different spectroscopic techniques and X-ray single-crystal analysis. From the X-ray crystal structure of 1, the Pb ²⁺ can be best described as a highly distorted pentagonal bipyramid with O ₄ (water) and O ₆ (nitrate) at apical positions (O ₄ -Pb-O ₆ of 143.7(1)°). Variability in bond distances reveals that Pb ²⁺ is unsymmetrically surrounded by two nitrates, one 2,2'-bpy and one water. Nitrates bridge between monomers. The molecule crystallizes in the monoclinic P2 ₁ /n (14) space group. This is the first example of a 1-D Pb(II) polymer in which nitrates show three different coordination motifs (terminal, chelating, and bridging). Solid state as well as solution phase UV-vis spectral analysis and mass spectrometric studies clearly reveal instability with breakdown of Pb(II) polymer in aqueous solution. The arrangement of the 2,2'-bpy, water, and nitrates leaves a coordination gap at the Pb(II) occupied probably by a stereo-active lone pair of electrons.
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