

New Journal of Chemistry 2016 vol.40 N12, pages 9981-9985

Complexes of non-lacunary Keggin- and Dawson-type polyoxometalates with Pb(ii): formation of 1D coordination polymers with different bonding modes

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Abstract

© The Royal Society of Chemistry and the Centre National de la Recherche Scientifique. A new coordination polymer based on Keggin-type $[\text{SiW}_{12}\text{O}_{40}]^{4-}$ and Pb^{2+} ions, $\{\text{Pb}_2(\mu_2\text{-DMF})_2(\text{DMF})_8(\text{SiW}_{12}\text{O}_{40})\}$ (1a), was prepared by a reaction between $\text{H}_4[\text{SiW}_{12}\text{O}_{40}]$ and $\text{Pb}(\text{NO}_3)_2$ in N,N-dimethylformamide (DMF). Varying the crystallization conditions, a complex with a slightly different coordination mode of the $\{\text{Pb}_2\}$ unit and solvate composition, $\{\text{Pb}_2(\mu_2\text{-DMF})_2(\text{DMF})_8(\text{SiW}_{12}\text{O}_{40})\} \cdot \text{DMF}$ (1b), can be obtained. The complex containing Well-Dawson polyoxoanions, $\{(\text{Pb}(\mu_2\text{-DMF})_3(\text{DMF})_6)(\text{Pb}(\text{DMF})_5)(\text{P}_2\text{W}_{18}\text{O}_{62})\} \cdot 0.5\text{DMF} \cdot 1.3\text{H}_2\text{O}$ (2), was prepared by a similar strategy.

<http://dx.doi.org/10.1039/C6NJ02155G>
