CRYSTAL STRUCTURE OF \{[\text{La}_2(\text{CNCH}_2\text{COO})_6(\text{H}_2\text{O})_4]\cdot\text{H}_2\text{O}\}_n\text{ COMPLEX}

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Abstract. The lanthanum(III) cyanoacetate complex of formula \{[\text{La}_2(\text{CNCH}_2\text{COO})_6(\text{H}_2\text{O})_4]\cdot\text{H}_2\text{O}\}_n\ (I), has been prepared and characterized by X-ray diffraction analysis. Compound crystallizes in the triclinic centrosymmetric space group \textit{P}-\textit{1} (No.2), \(a=8.997(5)\ \text{Å}, \ b=9.251(5)\ \text{Å}, \ c=9.728(5)\ \text{Å}, \ \alpha=67.849(5)°, \ \beta=84.224(5)°, \ \gamma=81.351(5)°\). Single-crystal X-ray diffraction study reveals that crystals of \(\text{I}\) exhibits one-dimensional coordination polymer structure, which is composed of cyanoacetate bridged lanthanum (III) ions. The \(\text{O}_9\) coordination surrounding of \(\text{La}^3+\) cation is completed by oxygen atoms of six carboxylate ligands that are coordinated in the bidentate bridging and tridentate-chelating bridging mode and two water molecules. The cations are bridged in a polymeric chain by four exo-bidentate cyanoacetate ligands or through \(\mu_2\)-\text{O} function of two other chelato-bridging cyanoacetate ligands. The \(\text{La}^3+\cdot\text{La}^3+\) separation along the polymer is equal to 4.754(3) \(\text{Å}\) and 4.608(2) \(\text{Å}\).

Keywords: coordination polymers, lanthanum (III), cyanoacetic acid, crystal structure.

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