Two novel one-dimensional inorganic-organic hybrids constructed from \([\text{H}_2\text{W}_{12}\text{O}_{40}]^{6-}\) clusters and lanthanide-organic complexes:

\[
[(\text{C}_5\text{H}_5\text{N}-\text{CO}_2)_2\text{Ln}(\text{H}_2\text{O})_3]_2[\text{H}_2\text{W}_{12}\text{O}_{40}] \cdot n\text{H}_2\text{O}
\]

\((\text{C}_5\text{H}_5\text{N}-\text{CO}_2 = \text{Pyridine-4-carboxylate}; \text{Ln} = \text{La}^{3+}, n = 5; \text{Ce}^{3+}, n = 7)\)

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Two novel polyoxometalate-based rare earth compounds, \([(\text{C}_5\text{H}_5\text{N}-\text{CO}_2)_2\text{Ln}(\text{H}_2\text{O})_3]_2[\text{H}_2\text{W}_{12}\text{O}_{40}] \cdot n\text{H}_2\text{O}\) \((\text{C}_5\text{H}_5\text{N}-\text{CO}_2 = \text{pyridine-4-carboxylate}; \text{Ln} = \text{La}^{3+} (1), n = 5; \text{Ce}^{3+} (2), n = 7)\), have been synthesized in aqueous solution and characterized by single-crystal X-ray diffraction, elemental analyses, IR spectra and TG analyses. The isostructural compounds 1 and 2 exhibit one-dimensional (1D) zig-zag chains, in which the dinuclear lanthanide complexes act as bridging linkers and the \([\text{H}_2\text{W}_{12}\text{O}_{40}]^{6-}\) groups serve as bidentate ligands. The results of cyclic voltammetry (CV) show that compounds 1 and 2 undergo two two-electron redox processes, similar to that of the parent \((\text{NH}_4)_6[\text{H}_2\text{W}_{12}\text{O}_{40}] \cdot 3\text{H}_2\text{O}\), and also reveal that the pH of the supporting electrolytic solution has a notable effect on the electrochemical behavior of compound 2.

**Key words:** Polyoxometalates, Lanthanide, Electrochemical Properties