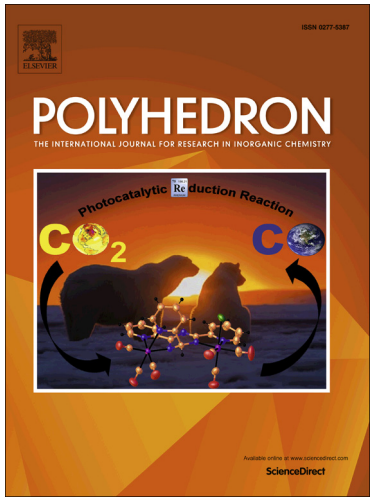

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Novel heterometallic polymeric lanthanide acetylacetonates with bridging cymantrenecarboxylate groups – synthesis, magnetism and thermolysis

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New isostructural complexes $[Ln(CymCOO)(acac)_2(H_2O)]_n$ (Ln = Eu (**1**), Gd (**2**), Tb (**3**), Dy (**4**), Ho (**5**), Er(**6**), acac – acetylacetonate (pentane-2,4-dionate) anion) having a polymeric structure based on CymCOO-bridged $\{Ln(acac)_2(H_2O)\}$ fragments were prepared by exchange reactions of hydrated Ln acetylacetonates with CymCOOH (Cym = $(\eta^5\text{-}C_5H_4)Mn(CO)_3$)) in a $CHCl_3$-EtOH-H_2O mixture. For the synthesized complexes comprising diamagnetic cymantrenyl moieties the temperature dependences of the dc magnetic susceptibility were studied in the temperature range of 300-2 K under an applied magnetic field of 5 kOe. Slow magnetic relaxation was found in complexes **4** and **6**. The thermal decomposition of the complexes was studied by TGA and DSC in the 30 – 600°C temperature range in air and under Ar atmosphere. In the former case, the reaction affords $LnMnO_3$ phases. The first step of the thermal decomposition of **6** was studied by the kinetic analysis. For the Dy and Ho complexes, standard thermodynamic functions were calculated from adiabatic calorimetry data. Manganites $LnMnO_3$ (Ln = Eu, Gd, Tb, Dy) were synthesized from the corresponding complexes, and their magnetic properties were studied.

Keywords: cymantrenecarboxylate, β-diketonate, magnetic properties, thermal decomposition, lanthanide manganites

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