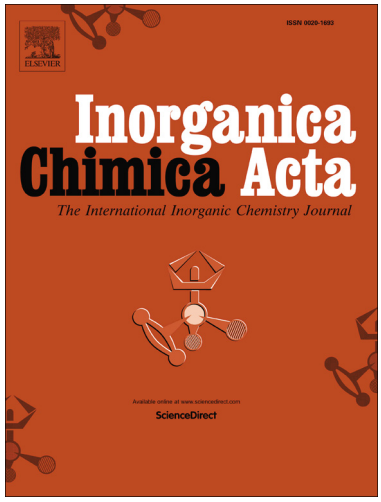

Research paper

Synthesis and structure analysis of three new lanthanide complexes, $[Ce(NO_3)_6].[(H\text{-}phen)_6.(NO_3)_3]$, $[Pr(NO_3)_6].[(H\text{-}phen)_6.(NO_3)_3]$ and $[Sm(NO_3)_3].(phen).(H_2O)_2].[(H\text{-}phen).(NO_3).H_2O]$

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Abstract

Three coordination assemblies, **1** – **3**, $[Ce(NO_3)_6].[(H\text{-}phen)_6.(NO_3)_3]$, $[Pr(NO_3)_6].[(H\text{-}phen)_6.(NO_3)_3]$ and $[Sm(NO_3)_3(phen)(H_2O)_2].[(H\text{-}phen).(NO_3).H_2O]$, respectively, wherein (H-*phen* = 1,10-phenanthroline), have been reported. In the complexes of **1** and **2**, secondary coordination spheres yield a host-network, into which primary coordination sphere is encapsulated. In the complex, **3**, however, both primary and secondary coordination spheres direct the formation of crossed ribbon structure, with voids being filled by water molecules. Nevertheless, acid molecules did not present in any of the complexes **1** – **3**. Three-dimensional structures are determined by single crystal X-ray diffraction method and the analysis of packing of the molecules within the crystal lattices has been discussed in detail.

Keywords: Host-guest Assembly; X-ray Diffraction; Lanthanides