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Different supramolecular architectures in self-assembled praseodymium(III) and europium(III) complexes with rare coordination pattern of salicylaldimine ligand.

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Streszczenie

The metal-promoted one-step reaction of 5-methylsalicylaldehyde with 1,3-phenylenediamine in the presence of europium(III) or praseodymium(III) ions produces salicylaldimine complexes containing the *N*,*N*′-bis(5-methylsalicylidene)-1,3-phenylenediamine ligand ($C_{22}H_{20}N_2O_2$ = H_2L) as a result of the [2 + 1] Schiff base condensation. The compounds were characterized by spectroscopic data (ESI-MS, IR, ^{1}H NMR, UV–Vis, luminescence), magnetic measurements, thermogravimetric analysis and X-ray crystallography. The crystal structures of the complexes reveal two different supramolecular architectures: a finite dimer in {[Eu_2(μ-$C_{22}H_{20}N_2O_2$)$_2$($C_{22}H_{20}N_2O_2$)$_2$(NO_3)$_6$]·2CH_3CN} complex with a nine-coordinate distorted tricapped trigonal antiprism geometry and an infinite two-dimensional polymer in {[Pr_2(μ-$C_{22}H_{20}N_2O_2$)$_4$(NO_3)$_6$]$_\infty$·4CH_3CN} complex with ten-coordinate distorted bicapped dodecahedron geometry. The rare cooordinated pattern of salicylaldimine is observed in these complexes in which the potentially tetradentate N_2O_2 Schiff base acts as undeprotonated monodentate and/or bridging ligands that use exclusively the oxygens as donor atoms with the nitrogen atoms not being involved in coordination.

Słowa kluczowe

lanthanides, Self-assembly, Schiff base complexes, Dimer, 2-D polymer

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