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The macrocyclic mononuclear lanthanide complexes derived from 2,6-diformyl-4-methylphenol and 1,3-diamino-2-hydroxypropane.

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Streszczenie

The new macrocyclic Schiff base lanthanide(III) complexes of the formula $Ln(H_4L)Cl_3 \cdot nH_2O$ have been synthesised in the template condensation of 1,3-diamino-2-hydroxypropane and 2,6-diformyl-4-methylphenol in the presence of La(III), Ce(III) and Eu(III) ions. The complexes have been characterised by elemental analyses, spectroscopic methods and X-ray crystallography. Their ^{1}H and ^{13}C NMR spectra have been assigned on the basis of COSY, NOESY and HMQC techniques. The isotropic shifts of the paramagnetic Ce(III) and Eu(III) derivatives indicate the unsymmetrical coordination of the lanthanide(III) ions within the macrocyclic ligand H_4L. The crystal structure of Eu(III) complex contains two different complex molecules; in each molecule the Eu(III) ion is eight-coordinate and the ligand adopts a bent conformation. In the first molecule the Eu(III) is bound to two nitrogen atoms and three oxygen atoms derived from the macrocyclic ligand as well as to three water molecules, while in the second molecule one of the coordinated water molecules is substituted by chloride anion.

Słowa kluczowe

Schiff base macrocycles, Lanthanide complexes, Crystal structure, NMR of paramagnetic compounds

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