

Lanthanide complexes of 2 + 2 meso-type macrocycle derived from *trans*-1,2-diaminocyclohexane and 2,6-diformylpyridine: X-ray crystal structures of La(III) and Sm(III) complexes.

Autorzy

Janusz Gregoliński

Andrzej Kochel

Jerzy Lisowski

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Streszczenie

The [LnL](NO₃)₃·nH₂O complexes of the series of all lanthanide(III) ions, except radioactive Pm, with the meso-type hexaazamacrocyclic L, derived from racemic *trans*-1,2-diaminocyclohexane and 2,6-diformylpyridine, have been synthesised and characterized. The X-ray crystal structures of the isomorphous La(III) and Sm(III) complexes show that the lanthanide(III) ions are coordinated by six nitrogen atoms of the relatively flat macrocycle L as well as by two axial bidentate nitrate anions and methanol molecule. The complexes have been characterised by NMR spectroscopy and mass spectrometry. ¹H NMR signals of the Ce⁺³, Pr⁺³, Nd⁺³, Eu⁺³ and Yb⁺³ complexes have been assigned on the basis of the COSY and HMQC spectra, and for the remaining lanthanide complexes the signals were assigned on the basis of linewidths analysis. The paramagnetic shifts of the series of lanthanide complexes [LnL](NO₃)₃·nH₂O have been analysed using both crystal-field dependent and independent methods. The results of this analysis indicate a change of coordination number along the series of Ln(III) complexes. The properties and stability of the lanthanide(III) complexes of the macrocycle L have been compared with those of the isomeric chiral macrocycle L1.

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