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Synthesis and structural characterisation of nickel 15-metallacrown-5 complexes with lanthanide(III) and lead(II) ions: influence of the central metal ion size on the spin state of peripheral nickel(II) ions.

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Streszczenie

The new 15-metallacrown-5 complexes were synthesised from nickel(II) salts and 2-picolinehydroxamic acid in the presence of lanthanide(III) (Ce, Pr, Sm, Dy, Er) or lead(II) ions. The samarium(III) and lead(II) 15-metallacrown-5 complexes were obtained as pyridine adducts and their X-ray crystal structures were determined. In the case of samarium(III) derivative, four nickel(II) ions of the metallamacrocycle are high-spin, six-coordinate and one nickel(II) ion is low-spin, square-planar. In the case of the analogous derivative of the larger lead(II), all five peripheral nickel(II) ions are six-coordinate, which results in the enlargement of cavity size of the metallacrown. The reaction of nickel 15-metallacrown-5 samarium(III) complex with copper(II) ions leads into more stable copper 15-metallacrown-5 samarium(III) complex, as shown by ^{1}H NMR and ESI-MS spectra.

Słowa kluczowe

Metallacrowns, Lanthanide complexes, Lead complexes, Nickel complexes, Crystal structure

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