

Synthesis and structural characterisation of copper(II) 15-metallacrown-5 complexes with Pb^{II}, Hg^{II}, Ag^I, Na^I and Y^{III} central metal ions.

Autorzy

Sabry H. Seda

Jan Janczak

Jerzy Lisowski

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Streszczenie

The new copper(II) 15-metallacrown-5 complexes with the central metal ions Pb^{II}, Hg^{II}, Ag^I, Na^I and Y^{III}, with the formula [MCu₅L₅]X_n {H₂L is 2-picolinehydroxamic acid or (S)-phenylalaninehydroxamic acid and X⁻ is NO₃⁻ or Cl⁻}, have been synthesised and characterised by NMR and UV/Vis spectroscopy, electrospray mass spectrometry and elemental analysis. The Pb^{II}- and Hg^{II} 15-metallacrown-5 complexes were obtained in the crystalline form as pyridine adducts [PbCu₅(picha)₅(py)₆](NO₃)₂·3(py) and [HgCu₅(picha)₅(py)₇](NO₃)₂·2(py) and their X-ray crystal structures were determined. In both complexes, each peripheral Cu^{II} ion of the metallacrown is coordinated by one pyridine molecule bonded in the axial position. In the case of the Pb^{II} derivative, one additional axial pyridine molecule is bound to the central metal ion, while in the case of the Hg^{II} derivative, two axial pyridine ligands are bound to the central Hg^{II} ion. The relative stability of the copper(II) 15-metallacrown-5 complexes with various central metal ions was determined on the basis of competition reactions. The relative preference of the 15-metallacrown-5 system for the central metal ion follows the series Na^I, Ag^I < lanthanide(III), Hg^{II} < Pb^{II}.

Adres publiczny

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