

Trinuclear thiocyanate-bridged compounds of the type $[ML]_2[Mn(NCS)_4](ClO_4)_2$ (where $M = Cu(II), Ni(II)$; $L = N$ -dl-5,7,7,12,14,14-hexamethyl-1,4,8,11-tetraazacyclotetradeca-4,11-diene).

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Streszczenie

The complexes of general formula $[ML]_2[Mn(NCS)_4](ClO_4)_2$ (where $M = Cu(II), Ni(II)$; $L = N$ -dl-5,7,7,12,14,14-hexamethyl-1,4,8,11-tetraazacyclotetradeca-4,11-diene) were obtained and the crystal structures of both heteronuclear compounds were determined at 173 K. Complex $[CuL]_2[Mn(NCS)_4](ClO_4)_2$ (1) crystallizes in a monoclinic space group, $C2/c$, with $a = 41.297(9)$ Å, $b = 7.571(2)$ Å, $c = 16.417(4)$ Å, $\beta = 96.97(15)$ degrees, $Z = 8$, whereas complex $[NiL]_2[Mn(NCS)_4](ClO_4)_2 \cdot H_2O$ (2) crystallizes in a monoclinic space group, $P2_1/c$, with $a = 21.018(5)$ Å, $b = 7.627(2)$ Å, $c = 16.295(4)$ Å, $\beta = 104.47(1)$ degrees, $Z = 4$. The magnetic behaviour of (1) and (2) has been investigated over the temperature range 1.8-300 K. Complex (1) displays ferromagnetic coupling inside the trinuclear core of CuMnCu and compound (2) behaves like a mononuclear Mn(II) system. The magnetic properties of the second compound (2) with a similar trinuclear structure shows that Ni(II) ions have a diamagnetic character and a rather weak zero-field splitting at the central Mn(II) ion occurs. Finally, the magnitudes of the Cu(II)-M(II) interactions with $M = Ni$ and Mn have been compared and qualitatively justified.

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