A $Cu^{II}Ni^{II}$ complex with ethylenediamine: crystal structure and ferromagnetic behaviour of an aqua-bridged heterometallic chain containing ambidentate $Ni(OAc)_4^{2-}$ blocks.

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Streszczenie

A one-pot reaction of copper powder and nickel and ammonium acetates in a CH_3OH solution of ethylenediamine (en) yields a unique 1D aqua-bridged polymer $[Cu(en)_2(\mu_2\text{-}H_2O)_2Ni(OAc)_4]_n \cdot 4nH_2O$ (**1**) with an ambidentate $Ni(OAc)_4^{2-}$ fragment that has not been previously characterized. The basic structural motif of **1** contains a previously unreported heterometallic $M(\mu_2\text{-}H_2O)M'$ aqua-bridge chain with alternating metal atoms. A complex system of N/O–H···O hydrogen bonds strengthens the polymeric chains and links them into a supramolecular three-dimensional network. Variable-temperature magnetic susceptibility measurements of **1** revealed a weak ferromagnetic coupling (J = 1.1 cm^{-1}) between the paramagnetic copper(II) and nickel(II) ions, which is transmitted through the oxygen bridges.

Słowa kluczowe

copper, nickel, chain structures, Direct synthesis, ferromagnetic behaviour, high-field EPR spectroscopy

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