

Self-assembly of the unique heterotrimetallic Cu/Co/M complexes possessing triangular antiferromagnetic $\{Cu_2CoPb\}_2$ and linear ferromagnetic $\{Cu_2CoCd_2\}$ cores.

Autorzy

Dmytro S. Nesterov

Vladimir N. Kokozay

Brian W. Skelton

Julia Jezierska

Andrew Ozarowski

Rok wydania

2007

Czasopismo

Dalton Transactions

Strony

558-564

DOI

10.1039/B612788F

Kolekcja

Naukowa

Język

Angielski

Typ publikacji

Artykuł

Streszczenie

Two novel heterotrimetallic octa- $[Cu_2CoPbCl_4(L)_4]_2$ (**1**) and pentanuclear $[Cu_2CoCd_2Cl_6(L)_4(Home)_2]$ (**2**) complexes have been prepared in one-pot reactions of zerovalent copper with metal chlorides in a methanol (for **1**) or acetonitrile (for **2**) solution of 2-(dimethylamino)ethanol (HL) in open air. The crystal structures of both compounds consist of discrete centrosymmetric heterotrimetallic molecules revealing triangular (**1**) and unique consecutive (**2**) arrangements of magnetic $Cu^{II}_2Co^{II}$ cores. The complex **1** can be viewed as a dimer made up of tetranuclear $Cu_2CoPbCl_4(L)_4$ units linked through the two μ_2 -Cl atoms. The molecular structure of **2** is a pentanuclear assembly containing the previously unknown $Cu(\mu-O)_2Co(\mu-O)_2Cu$ core. The magnetic studies of **1** revealed an antiferromagnetic coupling ($J_{CoCu} = 37 \text{ cm}^{-1}$ and $J_{CuCu} = 87 \text{ cm}^{-1}$) while **2** exhibits a weak ferromagnetic behavior ($J_{CoCu} = -3.2 \text{ cm}^{-1}$ and $J_{CuCu} = -14.2 \text{ cm}^{-1}$). The correlations between magnetic behaviour and structures as well as synthetic features are also discussed.

Adres publiczny

<https://doi.org/10.1039/B612788F>

Strona internetowa wydawcy

<https://www.rsc.org/>