

Imidazo[1,2-a]pyridin-2-ylacetic acid and two pairs of isomorphous $ML_2(H_2O)_2$ dihydrates (M=Ni, Co and Mn, Cd) based on its anion: syntheses, crystal structures and properties.

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Rok wydania

2014

Czasopismo

Polyhedron

Numer woluminu

75

Strony

9-21

DOI

10.1016/j.poly.2014.03.004

Kolekcja

Naukowa

Język

Angielski

Typ publikacji

Artykuł

Streszczenie

Imidazo[1,2-a]pyridin-2-ylacetic acid (HL, **1**) and four $ML_2(H_2O)_2 \cdot 2H_2O$ (M = Ni (**2**), Co (**3**), Mn (**4**), Cd (**5**)) complexes formed by its anion were synthesized, structurally characterized by single-crystal X-ray diffraction and investigated in terms of their thermal stability. In addition, magnetic properties of **2–4** are reported and the NIR–Vis–UV spectra of **2** and **3** are discussed in details. The crystal of **1** comprises 2D hydrogen bonded networks held in the crystal lattice by weak C–H \cdots O and π – π contacts. The $ML_2(H_2O)_2 \cdot 2H_2O$ complexes crystallize as isomorphous pairs (**2, 3** and **4, 5**) with slightly distorted hexa-coordinated environment around M(II) ion formed by two N,O-chelated imidazo[1,2-a]pyridin-2-ylacetate anions and two water molecules. In all **2–5**, coordinated and lattice water molecules join discrete octahedral complexes into 2D hydrogen-bonded networks, held in the crystal lattice by weak C–H \cdots O and π – π contacts.

The Co(II) and Ni(II) complexes (**2** and **3**) are thermally less stable than Mn(II) and Cd(II) complexes (**4** and **5**). These differences are discussed in view of Hirshfeld surface analysis of reported compounds. The magnetic properties of **2** and **3** are largely determined by a tetragonal distortion of coordinated polyhedron, which stays in good agreement with observed and calculated transitions energies and their assignments in the electronic spectra of both compounds. Compound **4** displays almost ideal Curie–Weiss paramagnetism over the whole temperature range. Additionally, in all **2–4**, weak magnetic exchange interactions mediated by H-bonds play a role with absolute values of J coupling parameter increasing in the order: Mn < Co < Ni.

Słowa kluczowe

Imidazo[1,2-a]pyridine scaffold, Transition metal complexes, X-ray structures, Thermal stability, Magnetic and spectroscopic properties

Adres publiczny

<http://dx.doi.org/10.1016/j.poly.2014.03.004>

Strona internetowa wydawcy

<http://www.elsevier.com>

Plik został wygenerowany dnia 2026-05-06 11:18:00

Adres w repozytorium <https://old.chem.uni.wroc.pl/pl/repozytorium/K82nP3o>.