

SYNTHESIS AND CRYSTAL STRUCTURES OF LUMINESCENT MONONUCLEAR Ni(II) AND Cd(II) COMPLEXES WITH 1,10-PHENANTHROLINE

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Abstract. Two new mononuclear coordination complexes constructed by non-covalent interactions, [Ni(phen)₂(H₂O)₂](ClO₄)₂ (**1**) and [Cd(ClO₄)₂(phen)₂] (**2**), where phen=1,10-phenanthroline, were synthesized and characterized by single-crystal X-ray diffractometry. The structural determination revealed that the coordination geometry around the Ni/Cd centres is distorted octahedral for each complex. In the complexes **1** and **2** the metal atoms have N₄O₂ coordination cores. In **1** the intermolecular OH...O hydrogen bonds, which involve the coordinating water molecules as donors and the perchlorate O atoms as acceptors form zigzag-like hydrogen-bonding chains, which are further assembled *via* π - π stacking interactions between adjacent phen rings, thus forming a supramolecular network structure. In the crystal structure of **2**, π - π stacking interactions are noted between neighbouring hydrophobic phen ligands, yielding 1D supramolecular chains. The luminescence studies show that compound **1** displays blue luminescence, while compound **2** – white-light emission upon excitation with ultraviolet light.

Keywords: supramolecular system, 1,10-phenanthroline, π - π stacking interaction, X-ray, luminescence.

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