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**Synthesis, Characterization and Properties of nicotinamide and isonicotinamide
complexes with diverse dicarboxylic acids**

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Abstract

Five nicotinamide and isonicotinamide complexes with diverse dicarboxylic acids, $[\text{Cu}(\mu_2\text{-ida})(\text{na})\cdot\text{H}_2\text{O}]_n$ (**1**), $[\text{Cu}(\text{oda})(\text{H}_2\text{O})_2(\text{ina})]$ (**2**), $[\text{Zn}(\text{oda})(\text{H}_2\text{O})_2(\text{na})]$ (**3**), $[\text{Zn}(\text{oda})(\text{H}_2\text{O})_2(\text{ina})]\cdot\text{H}_2\text{O}$ (**4**) and $[\text{Zn}(\text{tda})(\text{H}_2\text{O})_2(\text{ina})]\cdot 2\text{H}_2\text{O}$ (**5**), [ida: 2,2'-iminodiacetate, $\text{NH}(\text{CH}_2\text{COOH})_2$, oda: 2,2'-oxydiacetate, $\text{O}(\text{CH}_2\text{COOH})_2$, tda: 2,2'-thiodiacetate, $\text{S}(\text{CH}_2\text{COOH})_2$, na: nicotinamide and ina = isonicotinamide] were synthesized and characterized by elemental analysis, IR spectroscopy and single crystal X-ray diffraction. In all complexes, ina and na ligands connected to metal centers from pyridyl nitrogen atom. In complex **1**, ida ligand acts as a bridging ligand to form 1D chain while in the other complexes, oda and tda act as chelating ligands. In all complexes, three dimensional (3D) supramolecular network are generated through the $\text{O}-\text{H}\cdots\text{O}$ and $\text{N}-\text{H}\cdots\text{O}$ hydrogen bonds. Moreover, thermal, photoluminescence and optical absorption properties were studied.

Keywords: Isonicotinamide; nicotinamide; iminodiacetate; oxydiacetate; thiodiacetate.

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1. Introduction

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