N-alkylated amino acids play an important role in the studies related to the structural properties and biological activity and are very interesting compounds in fields such as medicinal chemistry and crystal engineering. We are interested in structures and properties of essential metal complexes with amino acids and their derivatives [1] (grant of the Croatian Science Foundation IP-2014-09-4274).

In this research we have synthesized and structurally characterized twelve new copper(II), nickel(II) and cobalt(II)/cobalt(III) compounds with N-methyl-, N-ethyl- and N-propylglycine. In nine monomeric complexes, [M(Rgly)2(H2O)2] (M = Co, Ni; R = Me, Et, or Pr), the metal ion is octahedrally coordinated with two O,N-donating Rgly ligands in the trans-fashion and two water molecules in the axial positions. In eight complexes the hydrogen bond donors (N-H and O water-H) interact with the neighboring carboxylic groups forming 2D networks. The alkyl groups point outward of the layers so there are only van der Waals interactions between them. Of the monomeric compounds only [Cu(Megly)2(H2O)2] forms a 3D network. In [{Co(Etgly)2(µ-OH)2}2H2O oxidation occurred and it is a dimeric Co(III) complex with a 3D network. [Cu(µ-Rgly)2]n R = Me or Et) are coordination polymers with 2D layered structures. Influence of alkyl chain length, intermolecular interactions, isostructurality, polymorphs and other structural details and properties will be discussed.