

## ABSTRACT

The polyamines are useful polydentate ligand for construction of supramolecular complexes. The supramolecular complexes are being synthesized using polyamines like 1,3-diaminopropane (1,3-DPN) and Melamine (MLN). The transition metal (copper, nickel and mercury) salts are being used for this purpose in presence of coligands including sodium azide, different organic bases like pyridine and some organic acid like methacrylic acid. The scheme 1  $[\text{Cu}(\text{N}_3)_2(\text{C}_3\text{H}_{10}\text{N}_2)_2]$  Diazidobis(propene-1,3-diamine)copper(II) was synthesized from copper sulfate (0.16g, 1.0 mmol), sodium azide (0.134 g, 2.0 mmol) and 1,3-DPN (0.167 ml, 2.0 mmol) in methanol (20 ml). The titled compound 1 crystallizes in triclinic space group, *P*-1, the  $\text{Cu}^{\text{II}}$  ion resides on a centre of symmetry and is in a John Teller distorted octahedral coordination environment comprising two N atoms from azide anion in axial positions and four N atoms from 1,3-DPN in equatorial positions. The intermolecular N—H---N hydrogen bonds generate the two-dimensional layers. The scheme 2  $[\text{Ni}(\text{CH}_3\text{COO})_2(\text{C}_3\text{H}_{10}\text{N}_2)_2] \cdot 2\text{H}_2\text{O}$ , Diacetatobis(propene-1,3-diamine)nickel(II)dihydrate crystallizes in triclinic space group, *P*-1,  $\text{Ni}^{\text{II}}$  atom resides on a centre of symmetry and is in an octahedral coordination environment comprising four amino N atoms and two carboxylate O atoms. Intermolecular N—H---O and O—H---O hydrogen bonds generate a two-dimensional polymeric network. The scheme 3  $[\text{C}_{19}\text{H}_{26}\text{Cu}_2\text{N}_6\text{O}_8]$  Poly[bis( $\mu$ -methacrylato)  $\mu$ -(1, 3, 5-triazine-2, 4, 6-triamine)] crystallizes in the triclinic space group, *P*-1 with  $a = 8.9670(2)$  Å,  $b = 9.4108(2)$  Å,  $c = 15.4476(3)$  Å,  $\alpha = 96.6090(10)^\circ$ ,  $\beta = 100.6270(9)^\circ$ ,  $\gamma = 95.5950(10)^\circ$   $v = 1263.25(5)$  Å<sup>3</sup>. Each Cu(II) exhibits a pseudooctahedral geometry. The four coplanar carboxylate oxygen atoms, which are coordinated to Cu(II) ion define the basal plane, whereas the apical position is occupied by one nitrogen atom from MLN ligand. Here, the carboxylato bridged two dinuclear copper(II) complexes are linked through MLN giving a 1-D alternating chain. The structure of 3 consists of a two-dimensional supramolecular layer constructed by intermolecular N-H...N hydrogen bonds of the MLN ligands from adjacent one-dimensional  $[\text{Cu}_2(\text{C}_4\text{H}_5\text{O}_2)_4(\text{C}_3\text{H}_6\text{N}_6)]$  chains. The scheme 4  $\text{NaHg}(\text{CN})_2(\text{N}_3)_2\text{Cu}(\text{N}_3)(\text{C}_3\text{H}_{10}\text{N}_2)_2$  crystallizes in the monoclinic space group *C*2/m, with  $a = 18.4365(12)$  Å,  $b = 7.5802(4)$  Å,  $c = 15.1888(10)$  Å,  $\alpha = 90^\circ$ ,  $\beta = 116.014(2)^\circ$ ,  $\gamma = 90^\circ$ ,  $v = 1907.6(2)$  Å<sup>3</sup>. The compound 4 features N—H---N hydrogen bonds, these bonds help to link the sheets together in the crystal and generates layered structure.

**Key words:** Supramolecular Complexes, Crystal Structure, Polyamines, Propene-1,3-diamine and 1,3,5-triazine-2,4,6-triamine