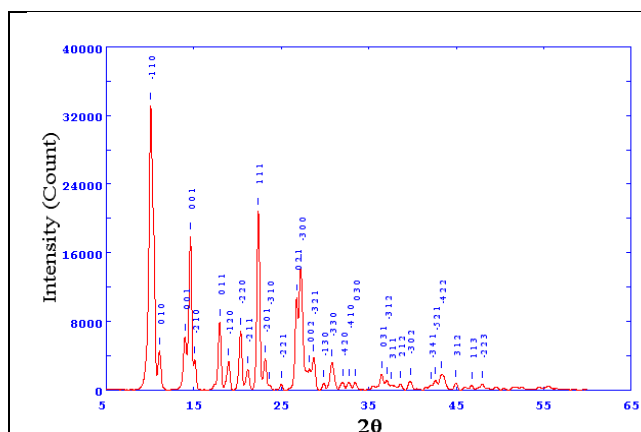


Miller indices and interplanar distances of Cu<sup>(II)</sup> complex:

h	k	l	2θ (Obs)	2θ (Cal)	d (Obs)	d (Cal)	Relative intensity
-1	0	0	6.51	7.04	13.55	12.53	322.18
-1	1	0	7.70	8.09	11.47	10.91	126.26
0	1	0	8.46	8.83	10.43	9.99	78.54
0	0	1	10.14	9.54	8.71	9.25	36.58
0	1	1	13.17	13.02	6.71	6.79	72.74
1	1	0	13.63	13.80	6.4	6.40	74.35

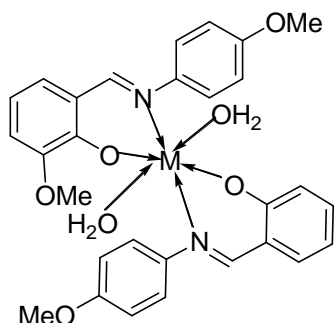
**Figure 5:** X-ray diffraction data of  $[\text{CuL}^1 \text{ and } \text{L}^2(\text{H}_2\text{O})_2]$   
 Crystal system: Lattice Type: Monoclinic, Lattice Parameter:  $a=14.474$ ,  $b=11.542$ ,  $c=9.257\text{\AA}$   
 Volume of unit cell  $V=898.235 (\text{\AA})^3$  Lattice Parameter  $\pi=\gamma=90^\circ\beta=120^\circ$



Miller indices and interplanar distances of Zn<sup>(II)</sup> complex:

h	k	l	2θ (Obs)	2θ (Cal)	d (Obs)	d (Cal)	Relative intensity
-1	1	0	10.09	10.18	8.75	8.67	330.91
0	1	0	11.09	11.02	7.96	8.01	450.35
0	0	1	14.00	13.99	6.31	6.32	620.46
0	0	1	14.60	13.99	6.05	6.32	179.54
-2	1	0	15.12	15.85	5.85	5.58	34.80
0	1	1	17.96	17.84	4.93	4.96	79.11

**Figure 6:** X-ray diffraction data of  $[\text{ZnL}^1 \text{ and } \text{L}^2(\text{H}_2\text{O})_2]$   
 Crystal system: Lattice Type: Monoclinic, Lattice Parameter:  $a=11.255$ ,  $b=9.257$ ,  $c=6.352\text{\AA}$   
 Volume of unit cell  $V=382.5807 (\text{\AA})^3$  Lattice Parameter  $\pi=\gamma=90^\circ\beta=120^\circ$



**Figure 7:** Synthesis of mixed ligand complexes.

$M=\text{Fe(III)} \text{ Zn(II)} \text{ Co(II)}, \text{ Ni(II)}, \text{ Cu(II)} \text{ and } \text{Mn(II)}$

## 5. Conclusions

The synthesis of mixed ligand and its transition metal complexes like Mn(II), Fe(III), Co(II), Ni(II), Cu(II), Zn(II) complexes with N and O donor Schiff base ligand derived from 4-methoxyphenylalanine, Salicylaldehyde and O-vanilline were synthesized. A comparative study of crystal system, miller indices of powder XRD. The powder XRD

study suggested that monoclinic crystal system for Mn(II), Fe(III), Co(II), Ni(II), Cu(II), Zn(II) complexes.

## References

- [1] Miyaura, N, Suzuki A, Chem. Rev. 95 (1995) 2457.
- [2] Baleizno C, Gigante B, Garcia H, Corma, A.J.Catal.221 (2004) 77.
- [3] Bandini M, Cozzi PG and Umani-Ronichi A, Chem.comun. (2002) 919.
- [4] Canali L and Sherrington DC, Chem. Soc. Rev. 28(1999) 85.
- [5] Agarwal BV and Hingorani S, Synth React InorgMet-org Chem, 20 (1993)1335.
- [6] Maurya R C, Mishra DD, Jain S and Jaiswal M, Synth React Inorg Met-org Chem, 23 (1995)1.10. Bassett J, Denney RC, Jaffery GH and Mendham J, Vogel's Textbook of quantitative Inorganic Analysis Including Instrumental Analysis: (ELBS and Longman Group Ltd. London) (1978) (a) p 473, (b) 447, (c) 483.
- [7] Tarcero J, Matilla M, Sanjuan A, M.A, Moreno C.F, Martin J.D, Walmsley J.A. Inorg. Chem Acta 342 (2003) 77.

- [8] Chohan Z H, Sheazi S K A, "synthesis and characterization of some Co (II) and Ni(II) complexes with nicotinylic hydrazine derivatives and their biological role of metal and anions (SO<sub>4</sub><sup>2-</sup>, NO<sub>3</sub><sup>-</sup>, C<sub>2</sub>O<sub>4</sub><sup>2-</sup> and CH<sub>3</sub>CO<sub>2</sub>) on the antibacterial properties" Synth. React. Inorg. Met-Org Chem 29 (1999) 105.
- [9] Milvoic N M, Dutca L M, Kostic N M Inorg. Chem. 42 (2003) 4036.
- [10] Munde, A.S.; Jagdale, A.N.; Jadhav, S.M.; Chondhekar, T.K.; Journal of the Korean Chemical society, 2009, 53, 407.
- [11] K.B. Gudasi, R.V. Shenoy, R.S. Vadavi, S.A. Patil. Spectrochim Acta A., 65, 598, 2006.
- [12] Venkateswar Rao, P.; A. Venkata Narasaiah, Indian J. Chem., 42A, 896, 2003.
- [13] G. B. Bagihalli, S. A. Patil, P. R. Badami, J. Enzyme Inhib. Med. Chem., 24(3), 730, 2009.
- [14] G. Roman, M. Andree, Bulletin of the Chemists and Technologists of Macedonia, 20, 131 (2001).
- [15] Jayabalakrishnan C, Natarajan K, "synthesis, characterization and biological activities of ruthenium (II) carbonyl complexes containing bifunctional tridentate Schiff bases," Synth react inorg met -org chem 30 (1999) 1023.
- [16] Jeeworth T; Wah H L K, bhoon M.G, Ghoorhood, Babooram K, "synthesis and antibacterial/catalytic properties of Schiff bases and Schiff base metal complexes derived from 2, 3-diaminopyridine" Synth React. Inorg met -org chem 30 (2000) 1023.
- [17] Vogel A I "Practical organic chemistry including Quantitative org. analysis" 3rd Ed (Longmans London) (1956) P 854.
- [18] Pargathi M. and Reddy K. H., *Indian J. of Chem.*, (2013), 52A, 845-853.
- [19] A. S. Munde, A. N. Jagdale, S. M. Jadhav, T. K. Chondhekar, J. Serb. Chem. Soc., 75(3), 349, 2010.
- [20] A. S. Munde, A. N. Jagdale, S. M. Jadhav, T. K. Chondhekar J. Korean Chem. Soc. 53, 407, 2009.
- [21] D.D. Suryawanshi, S.T. Gaikwad, A.D. Suryawanshi, A. S. Rajbhoj, International Journal of recent Technology and engineering ISSN : 227-3878, volume-2, Issue-3, July 2013.
- [22] D. D. Suryawanshi, S.T. Gaikwad, and A. S. Rajbhoj, Chemical Science Transaction, 2014, 3(1), 117-122.