

**Paper No: PU-SOE - Chemistry - 02**

**Physicochemical and non-linear optical studies of mixed ligand Cu(I), Fe(II) and Ru(II) complexes containing triphenylphosphine and a Schiffbase derived from furfural and hydrazine hydrate**

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**Abstract**

Mixed ligand complexes of Copper, Iron and Ruthenium containing triphenylphosphine and a simple Schiff base made up of furfural and hydrazine hydrate have been synthesized and characterized by their UV, IR, NMR, elemental analysis and magnetic susceptibility measurements. The characterization techniques suggest that the copper complex exhibits four coordinated square planar geometry, the iron complex exhibits a five coordinated square pyramidal geometry and the ruthenium complex exhibits a six coordinated octahedral geometry. The monomeric nature of the complex is assessed from their magnetic susceptibility values. The third-order nonlinear optical parameters of the complex were investigated by Z-scan technique. Nonlinear transmission measurements carried out using nanosecond laser pulses at 532 nm show that the complexes can be used as potential optical limiters.

**Keywords:**

Mixed ligands, Metal complexes, Furfural, NLO, Z-scan, Optical limiting

**Publication Details:**

<b>Journal Name</b>	<b>Vol.</b>	<b>Month &amp; Year</b>	<b>Page No.</b>	<b>Publisher</b>	<b>Scimago Ranking</b>
Chemical Data Collections	28	Aug, 2020	NA	Elsevier	Q3