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### Synthesis, structural analysis and antibacterial effect of a novel hetero-nuclear Ag(I)-Fe(II) coordination polymer

The synthesis and crystal structure of a novel polymeric silver(I)-iron(II) complex containing bridging ligand 4'-[4-(2,2,2-tris(1H-pyrazol-1-ido)ethoxymethyl)phenyl-2,2':6;2"]-terpyridine (TPT) are described. The reaction of TPT with FeCl<sub>2</sub>·6H<sub>2</sub>O afforded a complex [Fe(TPT)<sub>2</sub>]Cl<sub>2</sub> which in turn reacted with a range of silver salts such as AgNO<sub>3</sub>, AgClO<sub>4</sub> resulted in the formation of hetero-metal complexes which were characterized using <sup>1</sup>H NMR and ES-MS techniques. The reaction solution of the [Fe(TPT)<sub>2</sub>]Cl<sub>2</sub> complex with molar equivalent of AgClO<sub>4</sub> resulted in a solution with face needle-like crystals suitable for single X-ray crystallography. The complex was crystallized the triclinic space group, P1. The smallest repeating unit of the complex contains an [Fe(TPT)Ag<sub>2</sub>(H<sub>2</sub>O)<sub>2</sub>](ClO<sub>4</sub>)<sub>3</sub> unit. The Fe atom is coordinated by three nitrogen of terpyridine moiety from one TPT ligand and by three nitrogen of terpyridine moiety from another TPT ligand in an octahedral geometry fashion. While one Ag atom is coordinated by two nitrogen atoms of one pyrazolyl moiety from a TPT ligand and two nitrogen atoms of adjacent pyrazolyl moiety from another TPT ligand to generate a linear coordination polymer in a tetragonal geometry. The third nitrogen atom of the last pyrazolyl part is also coordinated to a silver ion which was itself coordinated to two water molecules through their oxygen atoms in a trigonal planar geometry. The shortest Ag-Ag distance is 5.337(1) Å within a TPT ligand. The Fe-Ag distances are 10.480(1) Å, 15.0637(1) Å within a unit cell. *In vitro* the study of the complex against some bacterial pathogens were also investigated.

### Biography

Ramin Zibaseresht is a Professor in Chemistry at Maritime University of Imam Khomeini in Noshahr and Adjunct Professor at Aja University of Medical Sciences in Tehran. He has completed his BSc in Chemistry from Shiraz University and his MSc in Inorganic Chemistry from Pune University. He has completed his PhD in Inorganic Chemistry from the University of Canterbury. He is currently the Head of Biomaterials and Medicinal Chemistry Research Centre in Tehran. He has published more than 50 papers in reputed journals and some international conferences and more than 10 books in the area of chemistry and 4 patents. He has been serving as an Editorial Board Member of some peer-reviewed journals, academic book publishers, member of more than 10 academic committees, organizing committees and academic boards of international conferences.

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