**Zahra Dehbanipoor**

[z.dehbanipoor@ch.iut.ac.ir](mailto:m.maghami@ch.iut.ac.ir)

Department of Chemistry

Isfahan University of Technology, Isfahan 84156-83111, Iran

Degree: M.Sc. Language: Farsi

**Supervisor: Hassan Hadadzadeh,** [**hadad@cc.iut.ac.ir**](mailto:hadad@cc.iut.ac.ir)

**Abstract**

Organometallic complexes, especially some transition metals complexes of ferrocene and substituted ferrocenes, have attracted considerable interest in recent years because of their unique optical , electrical and magnetic properties. Ferrocene derivetives are important organometallic compounds, specially as building blocks for catalysts ,new pharmaceuticals and polymers. They are generally prepared from simple functionalized ferrocenes, such as ferrocenyl ketones or aldehydes, ferrocene carboxylic acides, ferrocenecarboxaldehyde and etc. Ferronecarboxaldehyde is generally prepared by the direct Vilsmeier-Haackformylation of ferrocene with phosphorus oxychloride in the present of N,N-dimethylformamide.

Interest has been focused on Schiff base functional group because of its thermal stability , electrical conduction and photoconduction. . Ferrocene derivatives with good donor abilities (i.e.;nitrogen) have attracted much interest, as the coordination of a metal to these hetroatoms. In this project , ferrocenyl Schiff base was synthesized by the condensation of ferrocanacarboxaldehede with different aromatic amines under contoroled conditions, such as ,(I) slow addition of the carbonyl compound to an aromatic amine compound, (II) utilization of equimolar amounts of ferrocenecarboxaldehyde and of the aromatic amine in highly diluted solutions.application of ferrocene and its derivatives have been caused in this project, anumber of new ferrocene derivetives from condensation of ferrocenecarboxaldehyde and different amine synthesis. After purification and characterization of synthesised complex, application of them investigated in present of glucose.

I) [Fc-CH=N-C6H4-N=CH-Fc] V) [Fc-CH=N-C6H4-(N2)-C6H4-N=CH-Fc]

II) [Fc-CH=N-C6H5-C6H2-(C2O)-N=CH-Fc] VI) [Fc-CH=N-C6H4-(N2)-C6H5]

III)[ Fc-CH=N-C6H4-(SO2)-C6H4-N=CH-Fc] VII) [Fc-CH=N-C6H4-(C16H14) (N) (O)2]

IV) [Fc-CH=N-C6H4-(O)-C6H4-N=CH-Fc]

Synthesised complex were characterized by UV-Vis, FT-IR, 1H-NMR and elemental analysis. [Fc-CH=N-C6H5-C6H2-(C2O)-N=CH-Fc] was structurally characterized by X-Ray diffraction. The electrochemical properties of complex (I-VII) were also investigated by cyclic voltammetry. [Fc-CH=N-C6H4-(N2)-C6H5] were investigated as glocuse sensor by cyclic voltammetry. Structure of [Fc-CH=N-C6H4-(N2)-C6H5] is special and it can use as mediator for transfer of glucose to gloconolactone and show sensitivity in present concentration of blood glucose.

**Keywords:**

Ferrocenecarboxaldehyde, ferrocenyl Schiff-base, glucose, glucose oxidase.