5th NATIONAL INORGANIC CHEMISTRY CONGRESS

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APRIL 22-25, 2015

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ÖZET KİTABI

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Catalytic Dioxygen Activation by Co(II) Complex of One Redox-active Ligand

İLKAY GÜMÜŞ [1], ÜMMÜHAN SOLMAZ [1], HAKAN ARSLAN [1], ERSAN TURUNÇ [2], CORA MACBETH [3]

[1] DEPARTMENT OF CHEMISTRY, FACULTY OF ARTS AND SCIENCE, MERSIN UNIVERSITY, CIFTLIKKOY CAMPUS, MERSIN, 33343, TURKEY

[2] ADVANCED TECHNOLOGY RESEARCH AND APPLICATION CENTER, MERSIN UNIVERSITY, CIFTLIKKOY CAMPUS, MERSIN, 33343, TURKEY

[3] DEPARTMENT OF CHEMISTRY, EMORY UNIVERSITY, 1515 DICKEY DRIVE, ATLANTA, GA 30322, USA

The open-chain *tris*(amidate) ligand, *N,N'*-(3,6-dichloro-9*H*-carbazole-1,8-diyl)-*bis*(2,2-dimethylpropanamide), has been prepared and characterized by spectroscopic ^{1}H NMR, ^{13}C NMR, COSY, HMQC and FT-IR techniques. Monomeric cobalt complex, $K[Et_4N][Co(HL^{tBu})_2]$, of the ligand has been synthesized in drybox under a nitrogen atmosphere and characterized by single crystal X-ray diffraction (Figure 1) as well as ^{1}H NMR and FT-IR techniques. It crystallizes in the tetragonal space group *P42/nmc* with a = 14.486(3) Å, b = 14.486(3) Å, c = 18.246(5) Å and D_{calc} = 0.947 mg/m^3. In addition, the prepared complex was investigated by using cyclic voltammetry technique that allows to get more information about electrochemical mechanism of redox behavior of Co(II) complex. $K[Et_4N][Co(HL^{tBu})_2]$ catalytically oxidize 52% of triphenylphosphine in the presence of molecular oxygen which confirmed by Gas chromatography.

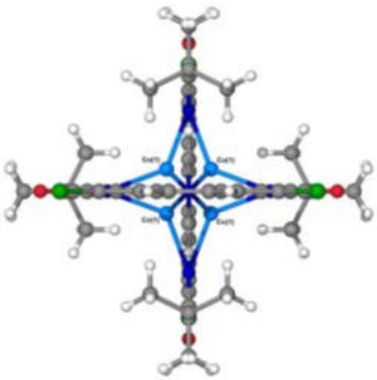

Figure 1. Molecular structure of $K[Et_4N][Co(HL^{tBu})_2]$.

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Keywords: Carbazole, Metal complexes, Homogeneous catalyst, Dioxygen, X-ray single crystal diffraction.