

*Design and Synthesis of Fe(II) Complexes Composed of a Novel Tridentate Ligand for Studying Spin State Transition Coupled to Proton Transfer*

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The design and synthesis of a tridentate ligand, 2-(1H-pyrazol-1-yl)-6-(1H-pyrazol-3-yl)pyridine, containing an acidic hydrogen was achieved in a two-step process where one step involves Suzuki Coupling. The ligand was coordinated around an Fe(II) center in a bis-manner. The Fe(III/II) redox behavior of the protonated and deprotonated Fe(II) complex was characterized by cyclic voltammetry under aprotic and protic (aqueous/acetonitrile mix) solvent conditions. Using a modified Evans Method, spin state studies were conducted on the Fe(II) system at room temperature in solution phase. The study was carried out by shifting from the fully protonated to the fully deprotonated Fe(II) complex to observe a shift in its spin state which generates a change in the magnetic behavior.