

## Multimetallic and Multiferrocenyl Assemblies of Ferrocenyl-Based Dithiophosphonate and Their Electrochemical Properties

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**Abstract :** This work presents an overview of the reaction of 2, 4-diferrocenyl-1, 3-dithiadiphosphetane-2, 4-disulfide (Ferrocenyl Lawesson's reagent) with water to produce the non-symmetric, ferrocenyl dithiophosphonic acid respectively in high yields. These acids were readily deprotonated by anhydrous Ammonia to yield the corresponding ammonium salt  $\text{NH}_4\text{S}_2\text{PFcOH}$ . These were complex to Ni (II) in molar ratio 1:1 and 1:2. The resulting complex from the reaction formed same compound with different isomers (Cis and Trans) and also compound with multimetallic coordination. Quality X-ray crystals were formed from THF/Ether. The compounds were characterized by  $^1\text{H}$ ,  $^{31}\text{P}$  NMR, and FTIR. Bulk purity were confirmed by either ESI-MS or elemental analysis and The XRD images were obtained using single crystal X-ray crystallographic studies. The electrochemical investigation of the Compounds were carried out using cyclic voltammetry.

**Keywords :** ferrocenyl, dithiophosphonate, isomer, coordination

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