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APPENDICES

APPENDIX A: Presented here are the CV curves of a 50 mg/l Ferrocene in acetonitrile before and after IR drop correction obtained at various scan rates.

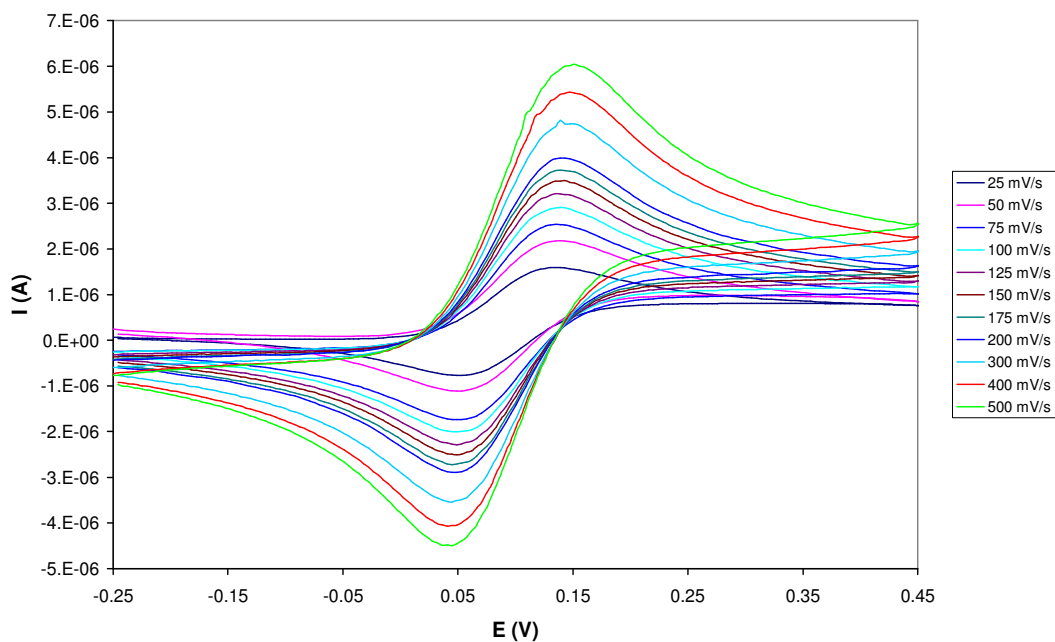


Figure A.1 CV curve of ferrocene in solution containing 0.01 M TBAHFP.

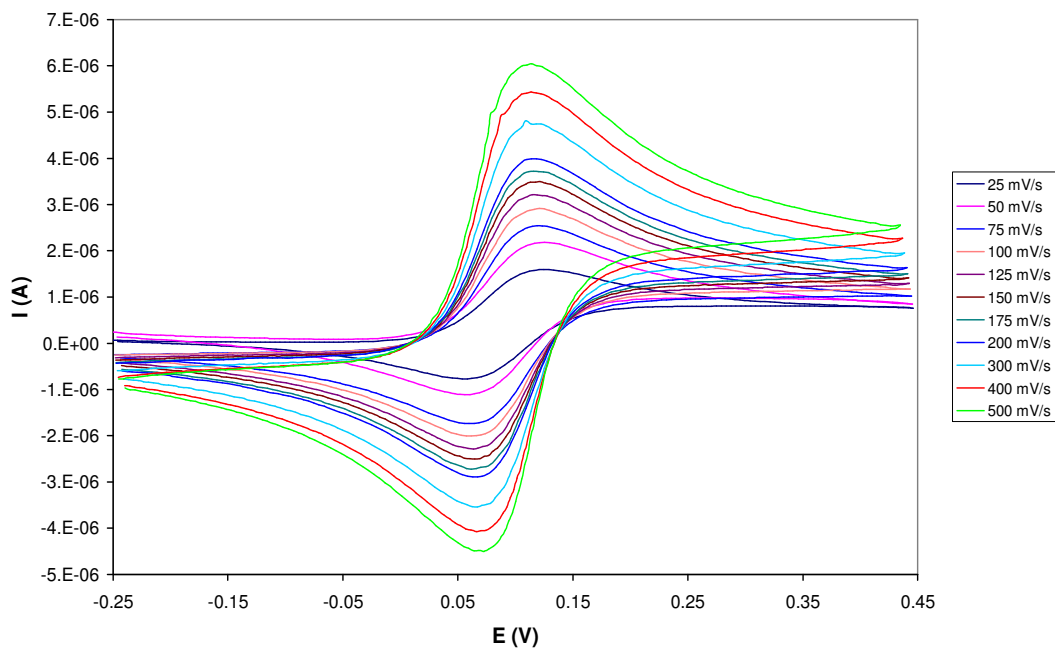


Figure A.2 CV curves of ferrocene from data in Figure A.1 after IR drop correction.

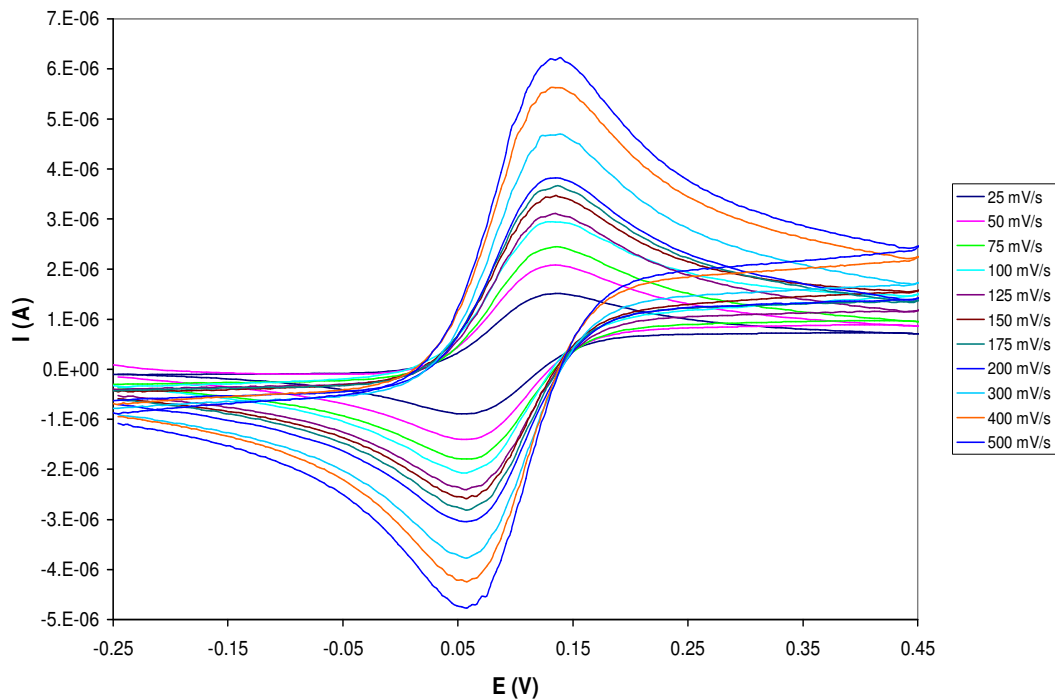


Figure A.3 CV curve of ferrocene in solution containing 0.05 M TBAHFP.

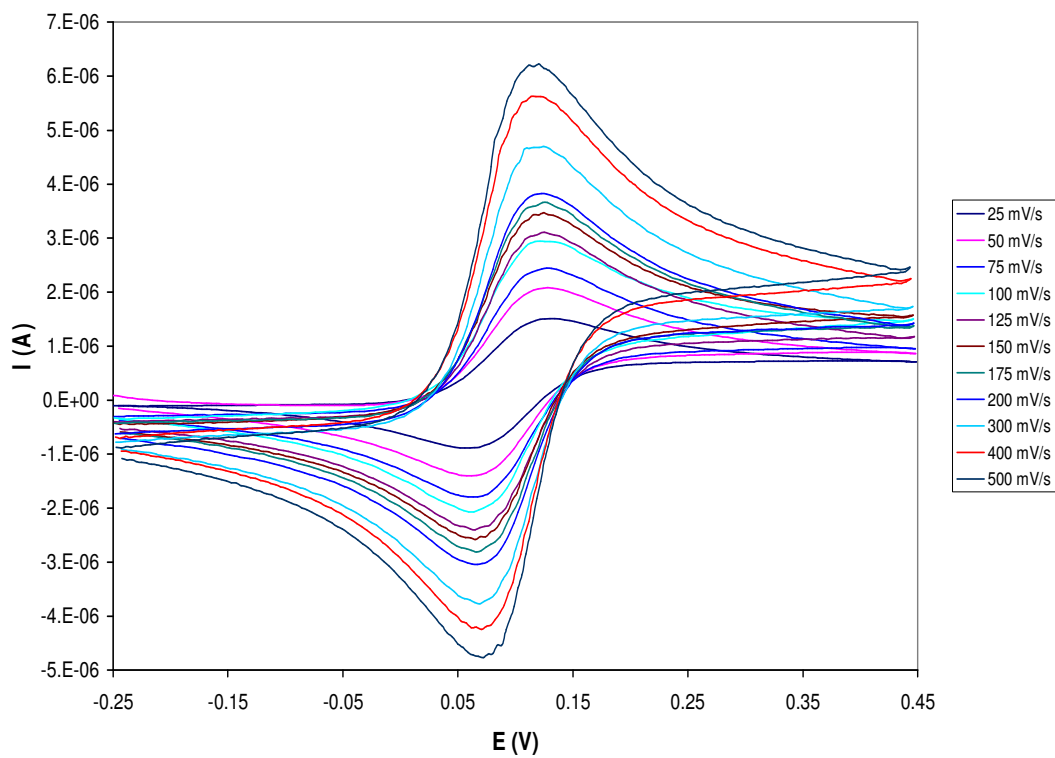


Figure A.4 CV curves of ferrocene from data in Figure A.3 after IR drop correction.

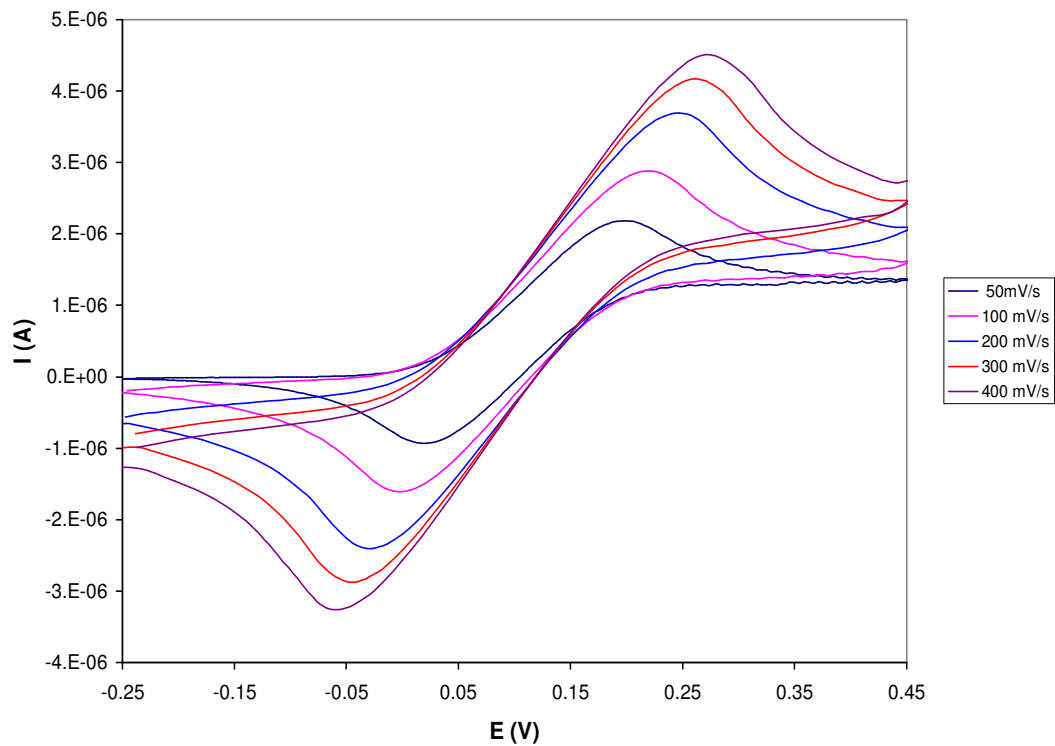


Figure A.5 CV curve of ferrocene in flowing solution containing 0.01 M TBAHFP using a flow-by cell, flow rate = 0.46 ml/min.

APPENDIX B

B 1 Characterization of $\text{CoCl}_2(\text{PPh}_3)_2$ and $\text{CoCl}(\text{PPh}_3)_3$

B 1.1 Elemental Analysis

ANALYSIS REPORT: ARC - INSTITUTE FOR SOIL, CLIMATE AND WATER
ONTLEDINGSVERSLAG: LNR - INSTITUUT VIR GROND KLIMAAT EN WATER



600 Belvedere Street, Arcadia, Pretoria. P.Bag X79, Pretoria, 0001.
Telephone: (012) 310 2500 Telefax (012) 323 1157

Report Number: F 2005/06-1113

Report on: Analysis of Co complexes from Univ. Pretoria, Electrochemistry Res.(W. Maboya).

Lab No.	F524
Sender No.	1
Formula	$\text{CoCl}_2(\text{PPh}_3)_2$
C% 1	65.71
C% 2	65.89
H% 1	4.53
H% 2	4.67
C% Mean	65.80
H% Mean	4.60
C% Expect	66.06
H% Expect	4.62

Lab No.	F525
Sender No.	2
Formula	$\text{CoCl}(\text{PPh}_3)_3$
C% 1	68.02
C% 2	68.31
H% 1	4.63
H% 2	4.86
C% Mean	68.17
H% Mean	4.75
C% Expect	73.59
H% Expect	5.15

B 1.2 Infrared Spectrums

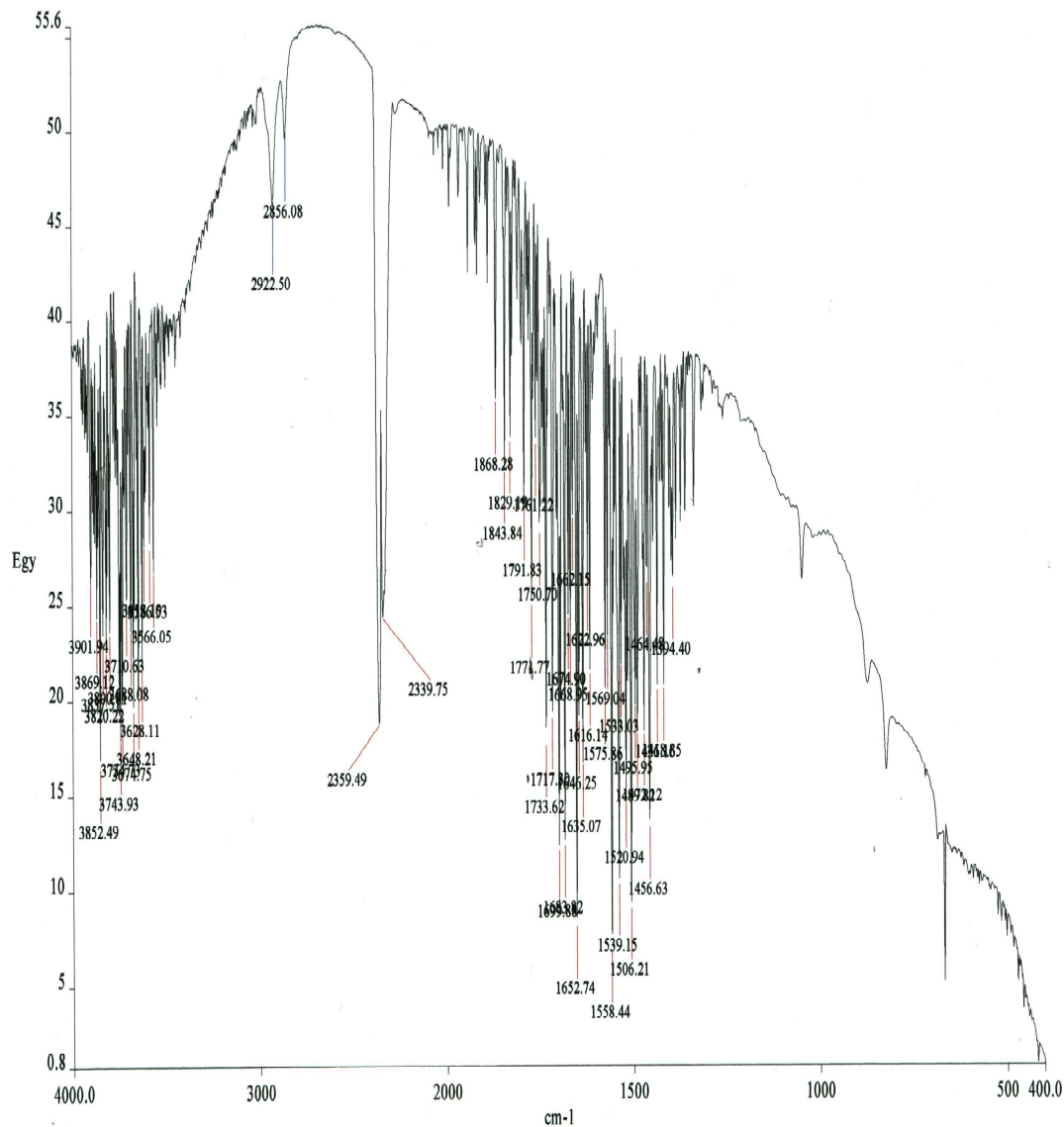


Figure B.1 Infrared spectrum of the background KBr in the wavelength ($\Delta\nu$) range of $4000\text{--}400\text{ cm}^{-1}$.

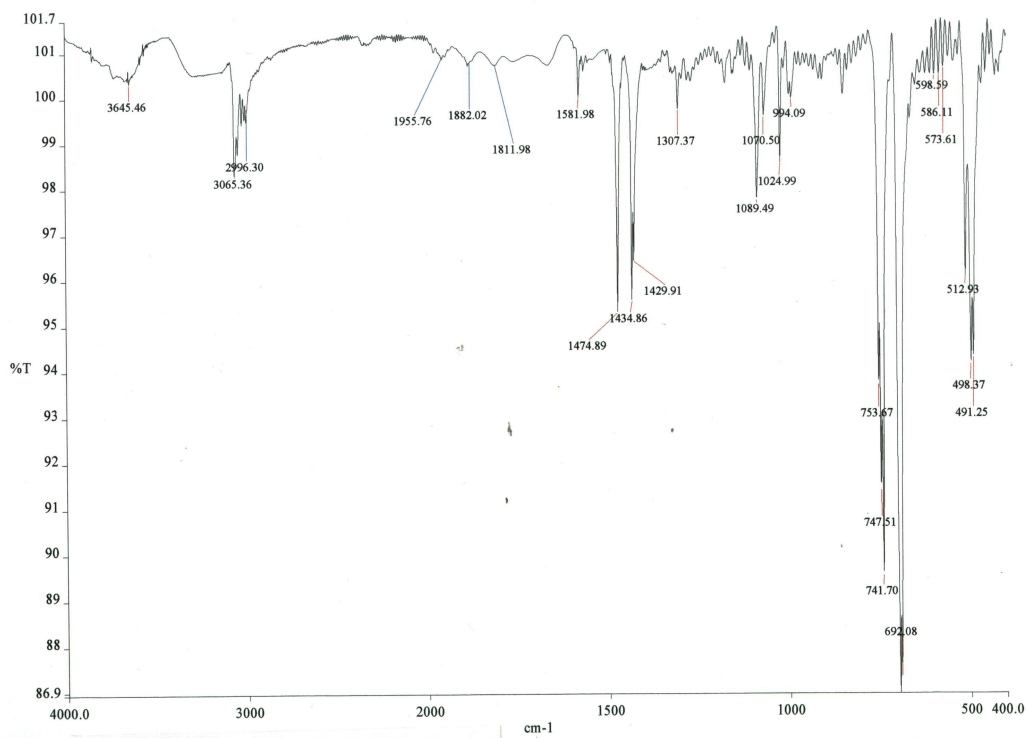


Figure B.2 Infrared spectrum of a free ligand PPh₃ in the wavenumber ($\Delta\nu$) range of 4000–400 cm⁻¹.

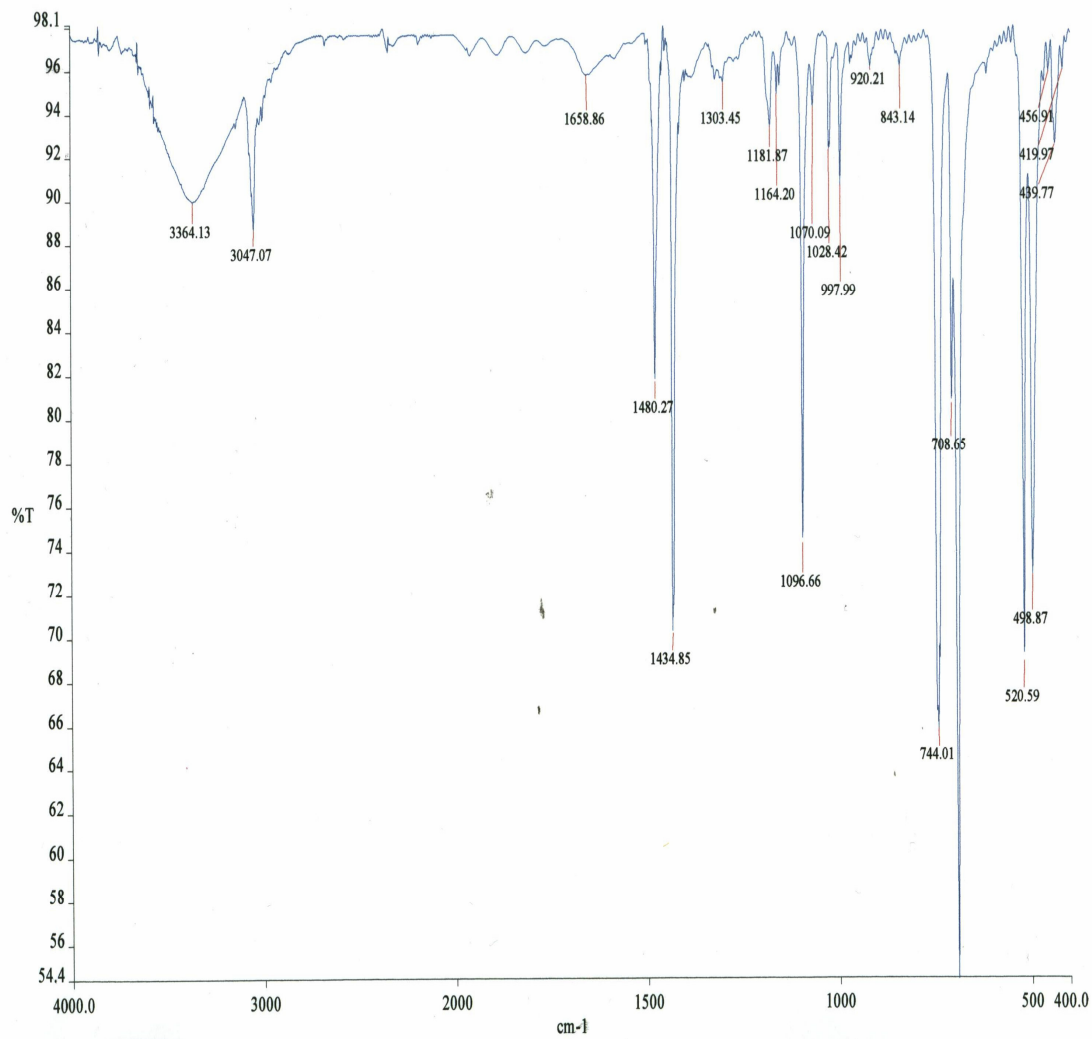


Figure B.3 Infrared spectrum of $\text{CoCl}_2(\text{PPh}_3)_2$ in the wavenumber ($\Delta\nu$) range of 4000–400 cm^{-1} .

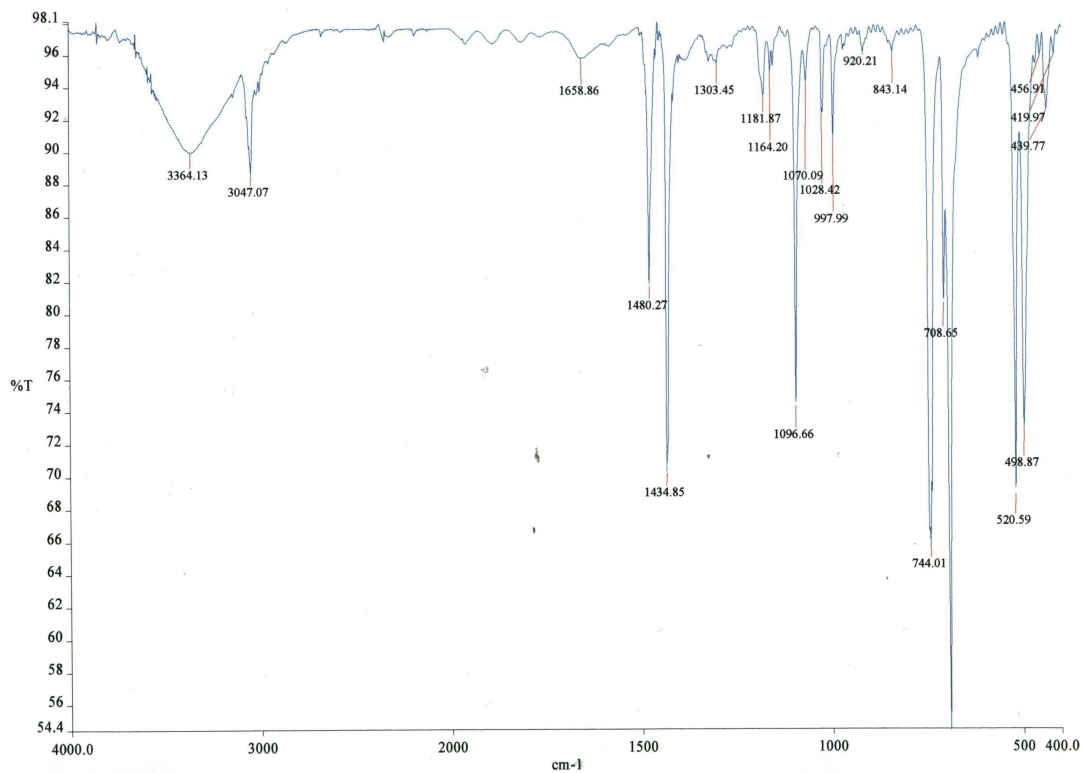


Figure B.4 Infrared spectrum of $\text{CoCl}(\text{PPh}_3)_3$ in the wavenumber ($\Delta\nu$) range of 4000–400 cm^{-1} .

B 2 Monitored titration of 7.7×10^{-4} mol/l $\text{CoCl}_2(\text{PPh}_3)_2$ with PPh_3 in a mixture of acetonitrile and pentanol containing 0.05 M TBAPF_6 using UV-Vis spectroscopy.

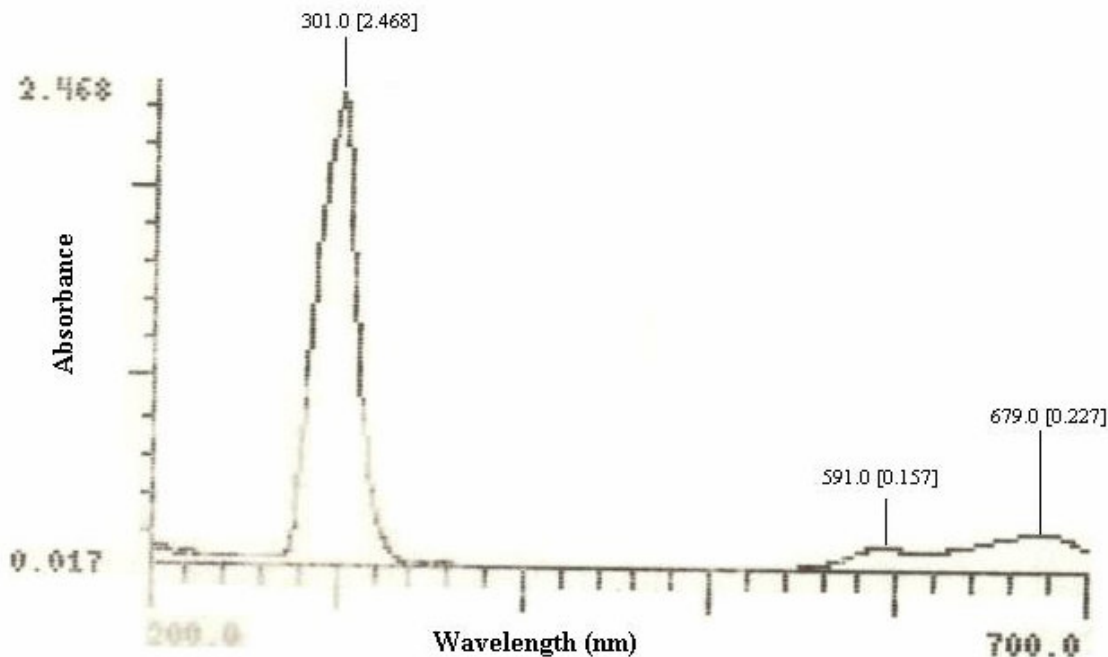


Figure B.5 UV-Visible spectrum of $\text{CoCl}_2(\text{PPh}_3)_2$ after addition of 2.5 equivalent moles of PPh_3 .

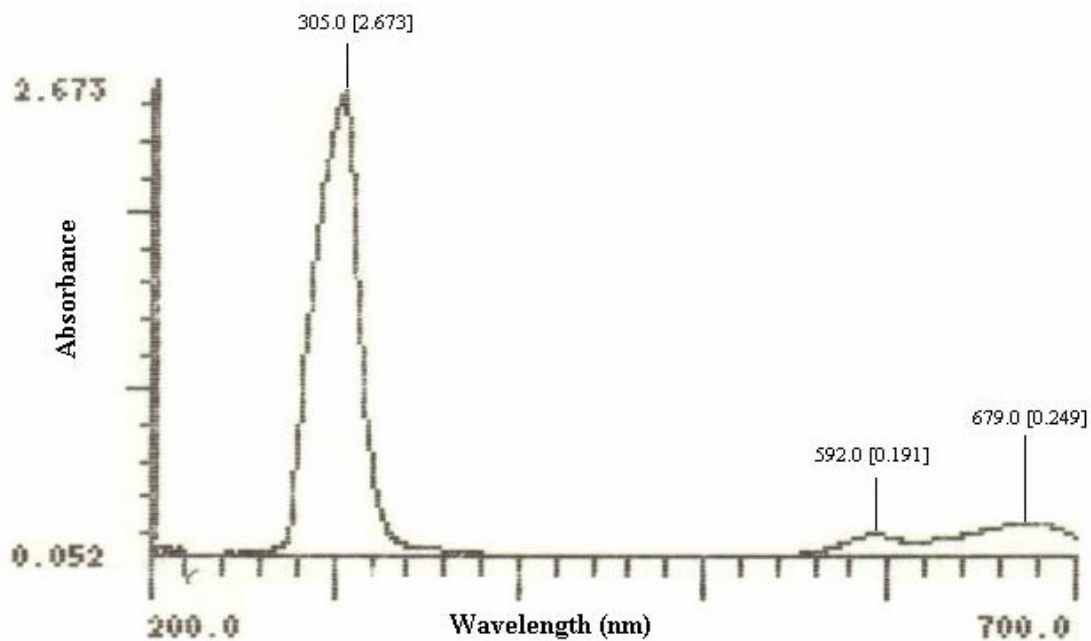


Figure B.6 UV-Visible spectrum of $\text{CoCl}_2(\text{PPh}_3)_2$ after addition of 5 equivalent moles of PPh_3 .

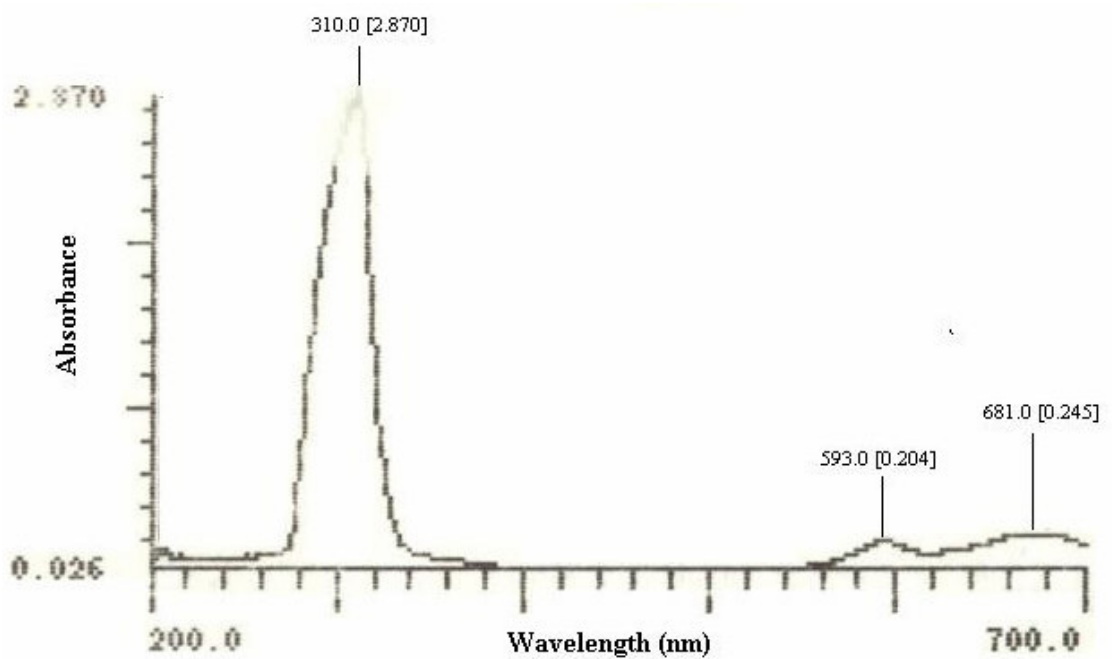


Figure B.7 UV-Visible spectrum of $\text{CoCl}_2(\text{PPh}_3)_2$ after addition of 15 equivalent moles of PPh_3 .

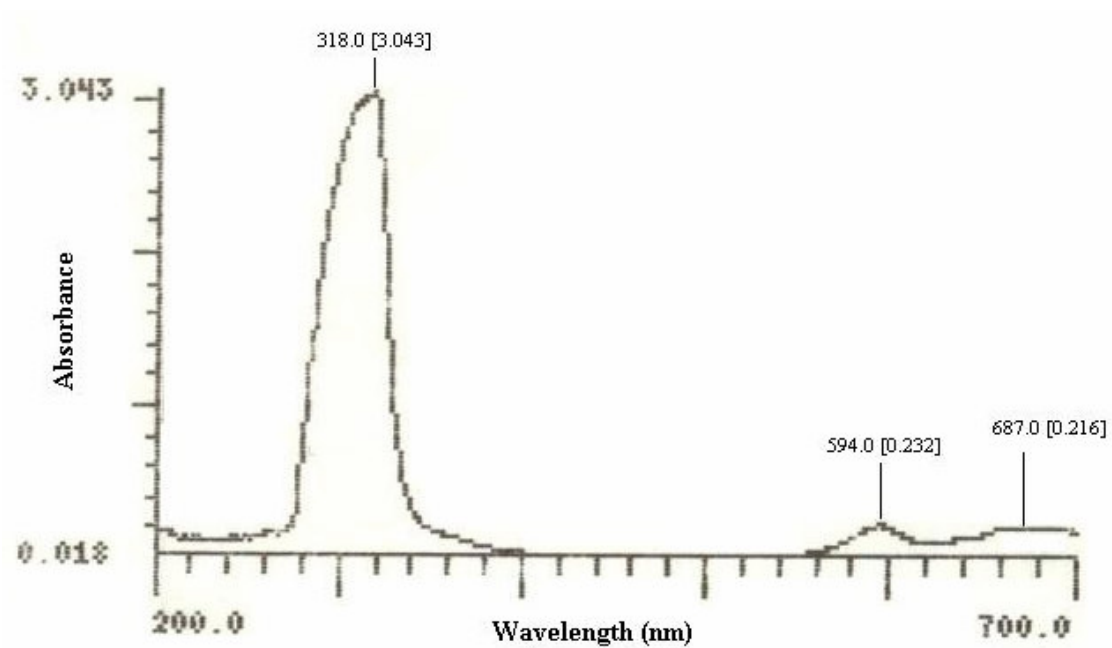


Figure B.8 UV-Visible spectrum of $\text{CoCl}_2(\text{PPh}_3)_2$ after addition of 75 equivalent moles of PPh_3 .

B 3 Monitored Titration of $\text{CoCl}_2(\text{PPh}_3)_2$ with PPh_3 in deteriorated chloroform (CDCl_3) at room temperature.

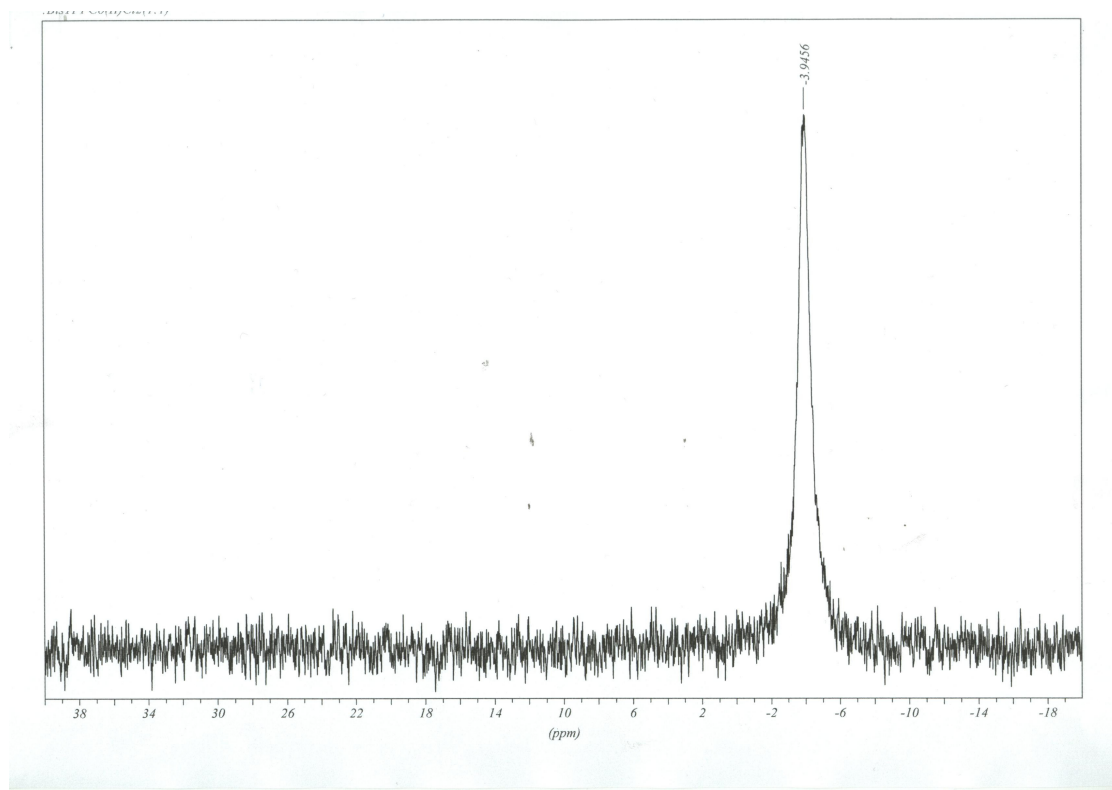


Figure B.9 ^{31}P NMR signals of a mixture of $\text{CoCl}_2(\text{PPh}_3)_2$ and PPh_3 (1:2.5 mole ratio).

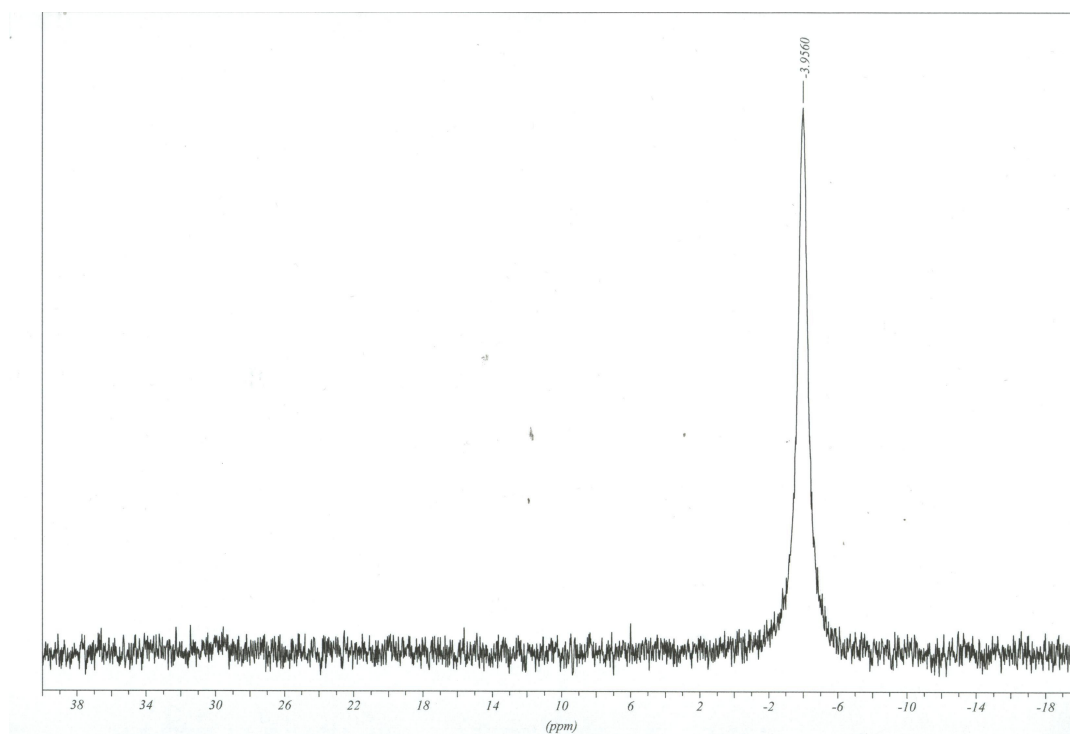


Figure B.10 ^{31}P NMR signals of a mixture of $\text{CoCl}_2(\text{PPh}_3)_2$ and PPh_3 (1:5 mole ratio).

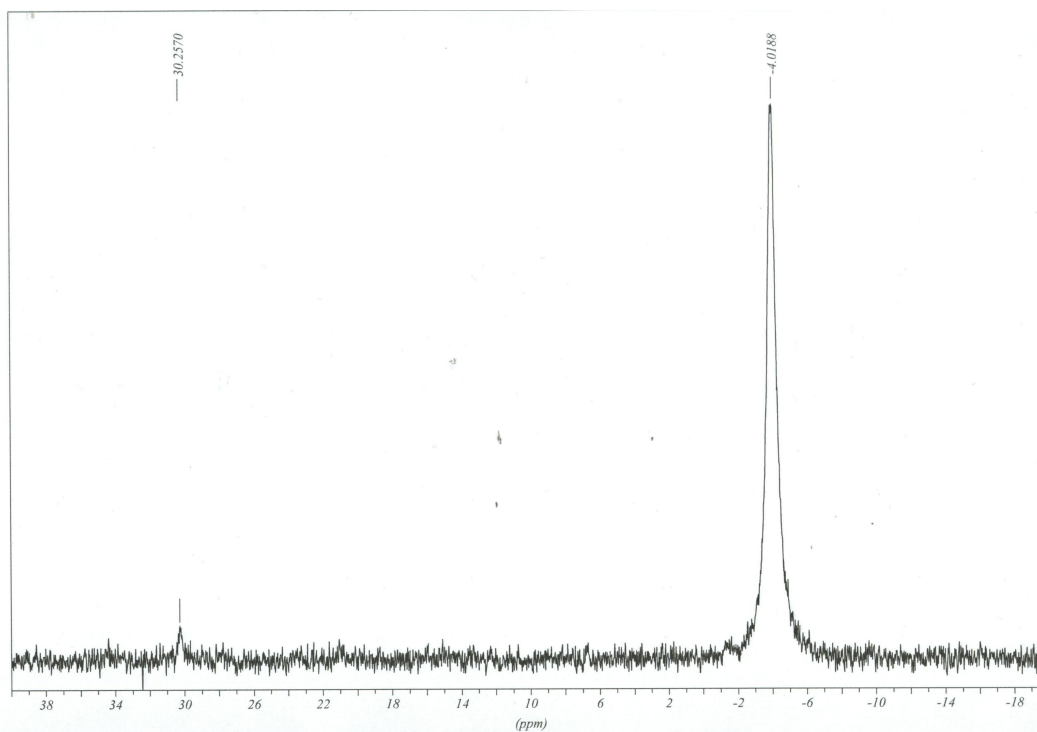


Figure B.11 ^{31}P NMR signals of a mixture of $\text{CoCl}_2(\text{PPh}_3)_2$ and PPh_3 (1:15 mole ratio).

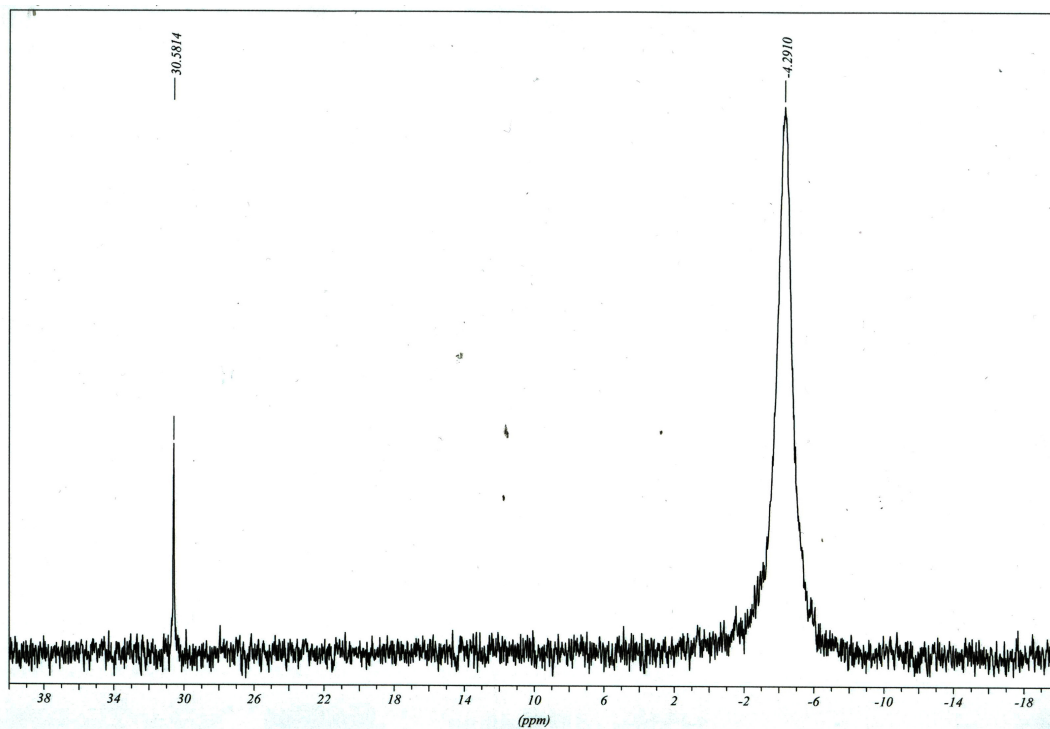


Figure B.12 ^{31}P NMR signals of a mixture of $\text{CoCl}_2(\text{PPh}_3)_2$ and PPh_3 (1:75 mole ratio).