

Table of Contents

Mononuclear Compounds 11

Page

1.5 Compounds with Ligands Bonded by Five C Atoms	1
1.5.1 Compounds with One ^5L Ligand	1
1.5.1.1 Compounds with $[\text{}^5\text{LFe}(\text{}^2\text{D})_2]^-$ Anions	1
1.5.1.2 Compounds with $[\text{}^5\text{LFe}(\text{}^2\text{D})_3]^{n+}$, $[\text{}^5\text{LFe}(\text{}^2\text{D})_2\text{}^2\text{D}']^+$, $[\text{}^5\text{LFe}(\text{}^2\text{D}-\text{}^2\text{D})\text{}^2\text{D}']^+$, and $[\text{}^5\text{LFe}(\text{}^2\text{D}-\text{}^2\text{D}-\text{}^2\text{D})]^+$ Cations	2
1.5.1.3 Compounds of the $^5\text{LFe}(\text{}^2\text{D})_2\text{X}$, $^5\text{LFe}(\text{}^2\text{D}-\text{}^2\text{D})\text{X}$, and $^5\text{LFe}(\text{}^2\text{D}-\text{X})\text{}^2\text{D}$ Type	16
1.5.1.4 Compounds with $[\text{}^5\text{LFe}(\text{}^2\text{D})_2\text{X}]^+$ and $[\text{}^5\text{LFe}(\text{}^2\text{D}-\text{}^2\text{D})\text{X}]^+$ Cations	40
1.5.1.5 Other Compounds with Chelating Ligands Formally of the D-X Type	42
1.5.1.6 Compounds of the $(\text{}^2\text{D}-\text{}^5\text{L})\text{Fe}(\text{}^2\text{D})\text{X}$ Type	44
1.5.1.7 Neutral and Ionic Compounds with Various Borane Ligands	46
1.5.1.8 Compounds Containing Nitrosyl Ligands	48
1.5.2 Compounds with One ^5L Ligand and Additional ^1L Ligands	49
1.5.2.1 Compounds without Iron Carbonyl Groups	49
Neutral ^5LFe Compounds with Various Donor Ligands	50
Compounds with a $[\text{}^5\text{LFe}(\text{}^2\text{D}-\text{}^2\text{D})\text{}^1\text{L}]^+$ Cation	67
1.5.2.2 Compounds with One CO Group	68
Compounds of the $^5\text{LFe}(\text{CO})\text{}^3\text{D}$ Type	68
Compounds of the $[\text{C}_5\text{H}_5\text{Fe}(\text{CO})(\text{CN})_2]^-$ Anion and Related Products	68
Hydrides of the $^5\text{LFe}(\text{CO})(\text{Si}(\text{X},\text{R})_3)_2\text{H}$ Type and Derived Salts	71
Intermediate $[\text{C}_5\text{H}_5\text{Fe}(\text{CO})\text{}^2\text{D}]^+$ Cations	75
Compounds with $[\text{}^5\text{LFe}(\text{CO})(\text{}^2\text{D})_2]^+$, $[\text{}^5\text{LFe}(\text{CO})(\text{}^2\text{D})\text{}^2\text{D}']^+$, and $[\text{}^5\text{LFe}(\text{CO})\text{}^2\text{D}-\text{}^2\text{D}]^+$ Cations	75
Compounds of the $^5\text{LFe}(\text{CO})(\text{}^2\text{D})\text{X}$ Type	86
Compounds with $^5\text{L}=\text{C}_5\text{H}_5$	86
Compounds with $^2\text{D}=\text{PR}_3$	86
Compounds with $^2\text{D}=\text{P}(\text{C}_6\text{H}_5)_3$	92
Compounds with $^2\text{D}=\text{PR}_2\text{R}'$	110
Compounds with $^2\text{D}=\text{P}(\text{OR})_3$	119
Compounds with $^2\text{D}=\text{P}(\text{OR})_2\text{R}'$ or $\text{PR}'_2\text{OR}$	128
Compounds with $^2\text{D}=\text{PF}_3$ or $\text{PF}_2\text{N}(\text{R},\text{X})_2$	129
Compounds with $^2\text{D}=\text{AsR}_2\text{R}'$, $\text{As}(\text{C}_6\text{H}_5)_3$, or $\text{Sb}(\text{C}_6\text{H}_5)_3$	130
$^5\text{LFe}(\text{CO})(\text{}^2\text{D})\text{X}$ Compounds with Substituted Cyclopentadienyl Ligands	133
Compounds with $^5\text{L}=\text{C}_5\text{H}_4\text{CH}_3$	133
Compounds with $^5\text{L}=\text{C}_5\text{H}_4\text{CH}(\text{C}_6\text{H}_5)_2$	134
Compounds with $^5\text{L}=1-\text{CH}_3(3-\text{C}_6\text{H}_5)\text{C}_5\text{H}_3$	134
Compounds of the $^5\text{LFe}(\text{CO})\text{}^2\text{D}-\text{X}$ Type	136
Nitrosyl Compounds	146
$\text{C}_5\text{H}_5\text{Fe}(\text{CO})\text{B}_3\text{H}_8$	147
Unstable $\text{C}_5\text{H}_5\text{Fe}(\text{CO})\text{}^1\text{L}$ Species	147
Compounds of $[\text{C}_5\text{H}_5\text{Fe}(\text{CO})(\text{CN})\text{}^1\text{L}]^-$ Anions and $\text{C}_5\text{H}_5\text{Fe}(\text{CO})(\text{CN})\text{}^1\text{L}$ Radicals	148
Compounds of the $^5\text{LFe}(\text{CO})(\text{}^2\text{D})\text{}^1\text{L}$ Type	150
Compounds with Nitrogen Donors	153
Compounds with $^2\text{D}=\text{PR}_3$	154

	Page
Compounds with $^2D=P(C_6H_5)_3$	157
Compounds with $^1L=COR$ and $CH=CHCOR$	157
Compounds with $^1L=COOR$ or CH_2COOR	169
Compounds with $^1L=CONH_nR_{2-n}$	173
Compounds with $^1L=Alkyl$ and Substituted Alkyl	173
Compounds with $^1L=C\equiv CR$	196
Compounds with $^1L=C_6H_5$ and Substituted Phenyl	196
Compounds with Other Cyclic 1L Ligands	200
Compounds with $^2D=P(C_6H_4CH_3-4)_3$	204
Compounds with $^2D=PR_2R'$ and $PRR'R''$	204
Compounds with $^2D=P(OR)_3$	211
Compounds with Various Other P Donors	220
Compounds with As, Sb, O, and S Donors	227
Compounds of the $C_5H_5-nR_nFe(CO)(^2D)^1L$ Type	229
Compounds of $[C_5H_5Fe(CO)(P(C_6H_5)_3)^1L]^+$ Cations	232
Compounds of the $^5LFe(CO)^1L-^2D$ Type	233
Compounds with 1L Ligands Containing Other Transition Metals Bonded to Iron	250
Compounds of $[C_5H_5Fe(CO)(^1L)_2]^-$ Anions	250
A $C_5H_5Fe(CO)$ Compound with Unknown Ligand Structure	254
1.5.2.3 Compounds with Two CO Ligands	255
$C_5H_5Fe(CO)_2H$ and $C_5H_5Fe(CO)_2D$	255
Compounds of the $C_5H_5Fe(CO)_2X$ Type with $X=F, Cl, Br, I$	257
Preparation and Formation	257
Physical Properties and Structure	261
Chemical Behavior	267
Catalysis and Use	277
Analysis	293
Adducts with Halogens and Lewis Acids	293
$C_5H_5Fe(CO)_2X$ Compounds with $X=CN, NCO, NCS, SCN, SeCN,$ and N_3	303
$C_5H_5Fe(CO)_2X$ Compounds with $X=NO_3$ and NO_2	312
Compounds with Fe-O Bonds	312
Compounds of the $C_5H_5Fe(CO)_2OS(O)R, C_5H_5Fe(CO)_2OS(O)_2R,$ and $C_5H_5Fe(CO)_2OS(O)_2OR$ Type	312
The Compound $C_5H_5Fe(CO)_2OP(O)(OC_6H_5)_2$	314
$C_5H_5Fe(CO)_2OOCR$ Compounds with $R=H, Alkyl,$ and Aryl	314
Compounds with Fe-S Bond	317
Compounds of the $C_5H_5Fe(CO)_2SR$ Type	317
Compounds of the $C_5H_5Fe(CO)_2(\mu-SR)M$ Type with $M=$ Transition Metal Carbonyl Group	322
Compounds of the $C_5H_5Fe(CO)_2SC(E)(R,X)$ Type with $E=O$ and S	323
Compounds of the $C_5H_5Fe(CO)_2SPR_2$ and $C_5H_5Fe(CO)_2SP(S)(R,X)_2$ Type	326
Compounds of the $C_5H_5Fe(CO)_2S(O)_2R$ Type with $R=Alkyl, Cycloalkyl,$ and Aryl	327
Further Compounds with $FpSO_n$ Units	337
Compounds with Fe-Se and Fe-Te Bonds	341
Compounds with Fe-N Bonds	342
Acyclic Amine and Ketenimine Ligands	342

Compounds with $C_5H_5Fe(CO)_2NSO_2$ Groups	345
Compounds with N-bound Heterocycles	348
Compounds with Fe-E, Bonds, where E= P, As, Sb, and Bi	356
Remarks on Abbreviations and Dimensions	375
Empirical Formula Index	376
Ligand Formula Index	398
Table of Conversion Factors	446