Appendix I

Supplemental Data for Table 13-3. 12-Vertex Transition Element Metallacarboranes

Compound[a]	Information[b]	References
Synthesis and Characterization		
Scandium		
Closo-ScC$_2$B$_9$ clusters		
$[3,1,2-\mathrm{Cp}*(\mathrm{H})\mathbf{Sc}(\mathrm{C_2B_9H_{11}})]_2^{2-}$	S, X, H, C	[541]
3,1,2-Cp*[(Me$_3$Si)$_2$CH]**Sc**(C$_2$B$_9$H$_{11}$)$^-$ Li$^+$	S, H, B, C	[541]
	X	[542]
{3,1,2-Cp*[(Me$_3$Si)$_2$CH]**Sc**(C$_2$B$_9$H$_{11}$)}$_2$Li·Li(THF)$_3$	X	[541]
3,1,2-[H$_2$C$_2$(DIPP)$_2$N$_2$C═N](THF)$_2$**Sc**(C$_2$B$_9$H$_{11}$) imidazolin-2-iminato complex	S, X, H, B, C	[1423]
3,1,2-[H$_2$C$_2$(DIPP)$_2$N$_2$C═N](THF)**Sc**[(NH$_2$CH$_2$CH$_2$)C$_2$B$_9$H$_{10}$] **Sc**—N imidazolin-2-iminato complex	S, X, H, B, C	[1423]
3,1,2-(*cyclo*-C$_3$N$_2$Ar$_2$)═N–**Sc** (THF)[(H$_2$NCH$_2$CH$_2$)C$_2$B$_9$H$_{10}$] **Sc**–N Ar = 2,6-C$_6$H$_3$(CHMe$_2$)$_2$	S, X, H, B, C	[1430]
Yttrium		
Closo-YC$_2$B$_9$ clusters		
3,1,2-(THF)$_2$Na(μ-Cl)$_2$(THF)$_2$**Y**(C$_2$B$_9$H$_{11}$)	S, H, B, C, IR	[543]
3,1,2-(THF)$_2$K(μ-Cl)$_2$**Y**[(Me$_2$NCH$_2$CH$_2$)(MeOCH$_2$CH$_2$)C$_2$B$_9$H$_9$] **Y**—N, **Y**—O	S, X, H, B, C, IR	[544]
3,1,2-[H$_2$C$_2$(DIPP)$_2$N$_2$C═N] (THF)$_2$**Y**(C$_2$B$_9$H$_{11}$) imidazolin-2-iminato complex	S, X, H, B, C	[1423]
3,1,2-(*cyclo*-C$_3$N$_2$Ar$_2$)═N—**Y**(THF)[(H$_2$NCH$_2$CH$_2$)C$_2$B$_9$H$_{10}$] **Y**—N Ar = 2,6-C$_6$H$_3$(CHMe$_2$)$_2$	S, X, H, B, C	[1430]
3,1,2-(*cyclo*-C$_3$N$_2$Ar$_2$)═N—**Y**[(MeOCH$_2$CH$_2$)(H$_2$NCH$_2$CH$_2$)-C$_2$B$_9$H$_9$] **Y**—O, **Y**—N Ar = 2,6-C$_6$H$_3$(CHMe$_2$)$_2$	S, X, H, B, C	[1430]
3,1,2-(*cyclo*-C$_3$N$_2$Ar$_2$)═N—**Y**[(H$_2$NCH$_2$CH$_2$)$_2$C$_2$B$_9$H$_9$] 2 **Y**—N Ar = 2,6-C$_6$H$_3$(CHMe$_2$)$_2$	S, X, H, B, C	[1430]
3,1,2-(thf)$_2$(*cyclo*-CH$_2$C$_6$H$_4$NMe$_2$)**Y**[(*cyclo*-CH$_2$OCH$_2$)C$_2$B$_9$H$_9$]	S, X, H, B, C, IR	[1571]

Compound	Information	References
3,1,2-(thf)$_2$[OCPh(C_5H_4N)($CH_2C_6H_4NMe_2$)(*cyclo*-$CH_2C_6H_4NMe_2$)**Y**[(*cyclo*-CH_2OCH_2)$C_2B_9H_9$] N—**Y**	S, X, H, B, C, IR	[1571]
3,1,2-[(Me_3C)$_3C_6H_2$NC][$CH_2C_6H_4NMe_2$)**Y**(*cyclo*-CH_2OCH_2)-$C_2B_9H_9$] **Y**—N	S, H, B, C, IR	[1571]
3,1,2-($MeOCH_2CH_2OMe$)$_2$**Y**[(C_9H_6)$C_2B_9H_{10}$] **Y**—C_9H_6 constrained-geometry	S, X, H, B, C, IR, MS	[1588]
3,1,2-(thf)$_2$**Y**{[Ph(NC_5H_4)C(O)C_9H_6]$C_2B_9H_{10}$] **Y**—O, **Y**—N constrained-geometry	S, X, H, B, C, IR, MS	[1588]
3,1,2-(thf)$_3$**Y**{[Ph_2C(O)C_9H_6]$C_2B_9H_{10}$] **Y**–O constrained-geometry	S, X, H, B, C, IR, MS	[1588]
3,1,2-($MeOCH_2CH_2OMe$)**Y**{[Ph_2C═C(O)C_9H_6]$C_2B_9H_{10}$} **Y**—O constrained-geometry	S, H, B, C, IR, MS	[1588]
3,1,2-(thf)$_3$**Y**{[(NC_5H_4)$_2$C(O)C_9H_6]$C_2B_9H_{10}$] **Y**—O, **Y**—N constrained-geometry	S, H, B, C, IR, MS	[1588]
Lanthanum		
Closo-LaC$_2$B$_9$ clusters		
3,1,2-(THF)$_2$**La**($MeOCH_2$)$_2C_2B_9H_9$]$^-$	S, H, B, IR	[545]
Lanthanide Elements		
LnC$_2$B$_9$ clusters		
3,1,2-(THF)$_4$**Ln**($C_2B_9H_{11}$) **Ln = Sm**, **Yb**	S, X(Sm), H, B, IR, MAG	[547,548]
3,1,2-($HCONMe_2$)$_4$**Yb**($C_2B_9H_{11}$)	S, H, B, IR	[547]
	X	[547,548]
3,1,2-(THF)$_2$(Me_2HSi)$_2$**Ln**[($Me_2NCH_2CH_2$)$C_2B_9H_{10}$] **Ln**-N **Ln = Sm**, **Er**	S, X, H, B, C, IR	[544]
3,1,2-[H_2C_2(DIPP)$_2N_2$C═N] (THF)$_2$**Lu**($C_2B_9H_{11}$) imidazolin-2-iminato complex	S, X, H, B, C	[1423]
3,1,2-[H_2C_2(DIPP)$_2N_2$C═N](THF)**Lu**[($NH_2CH_2CH_2$)$C_2B_9H_{10}$)] M—N imidazolin-2-iminato complex	S, X, H, B, C	[1423]
3,1,2-(*cyclo*-$C_3N_2Ar_2$)═N—**Lu**(THF)$_2$($C_2B_9H_{11}$) Ar = 2,6-C_6H_3($CHMe_2$)$_2$	S, X, H, B, C	[1430]
3,1,2-(*cyclo*-$C_3N_2Ar_2$)═N—**Lu**(THF)[($H_2NCH_2CH_2$)$C_2B_9H_{10}$] **Lu**—N Ar = 2,6-C_6H_3($CHMe_2$)$_2$	S, X, H, B, C	[1430]
{3,1,2-(thf)Cl_2**Gd**[(*cyclo*-CH_2OCH_2)$C_2B_9H_9$]}$_2$$Na_2(thf)_4$	S, X, H, B, C, IR	[1571]
Uranium		
Closo-UC$_2$B$_9$ clusters		
3-**U**[1,2-($MeOCH_2$)$_2C_2B_9H_9$]$_2$	S, X, H, B	[545]
3,1,2-(THF)$_2I_2$**U**($Me_2C_2B_9H_9$)$^-$	S, X, H	[552]
3-Br_2**U**(1,2-$C_2B_9H_{11}$)$_2$	S, E	[553]
Titanium		
Closo-TiC$_2$B$_9$ clusters		
3,1,2-Cp*Me**Ti**(PMe_3)($C_2B_9H_{11}$)	S, H, B, C, P	[554]
3,1,2-Cp*(N═CMe_2)**Ti**($C_2B_9H_{11}$)	S, X, H, B, IR	[554]
3,1,2-Cp*R**Ti**($C_2B_9H_{11}$) R = Et, CMe═CMe_2	S, H, B, C	[554]
3,1,2-Cp***Ti**(MeCN)($C_2B_9H_{10}$-4-CHMeO-)	S, X, H(2d), B, C	[555]
2,1,7-(η^8-C_8H_8)**Ti**($C_2B_9H_{11}$)$^-$	S, B, IR, E	[557]

Continued

Compound	Information	References
3,1,2-($Me_4C_5CH_2$—)**Ti**($C_2B_9H_{11}$)	S, H, B, C, IR	[554]
	X	[556]
3,1,2-[*cyclo*-($C_{13}H_9$)P[N($CHMe_2$]$_2$=O—](NMe_2)$_2$**Ti**($C_2B_9H_{11}$) $C_{13}H_9$=fluorenyl **Ti**—O (FF)	S, X, H, B, C, P, IR	[558]
3,1,2-(Me_2N)$_2$($HNMe_2$)**Ti**($C_2B_9H_{11}$)	S, X, H, B, C, IR	[559]
3,1,2-(Me_2N)$_2$($HNMe_2$)**Ti**[(C_9H_7)$C_2B_9H_{10}$]	S, H, B, C	[560]
3,1,2-Ln(Me_2N)**Ti**[(C_9H_6)$C_2B_9H_{10}$] L=DME, THF, C_5H_5N	S, X(DME), H, B, C	[560]
3,1,2-(Me_2N)$_2$**Ti**[(Me_2NCH_2)$_2C_2B_9H_9$]	S, X, H, B, C	[561]
[(MeN)**Ti**[(Me_2NCH_2)$_2C_2B_9H_9$]$_2$Ti(NMe_2)$_2$(μ-O)	S, X, H, B	[561]
3,1,2-Cl**Ti**[(H_2NCH_2)$C_2B_9H_{10}$]	S, H, B, C, IR	[562]
3,1,2-(Me_2N)$_2$**Ti**[($R_2C_6H_3$-N=CH)$C_2B_9H_{10}$] R=$CHMe_2$, Me **Ti**—N imido catalyst for polymerization of C_2H_4 with MAO (R=$CHMe_2$)	S, X, H, B, C, IR, MS	[563]
3,1,2-Cl**Ti**[Me(C_6H_{10}-O-)$C_2B_9H_9$] **Ti**—O C_6H_{10}=cyclohexyl	S, H, B, C, IR	[564]
3,1,2-Cl_2**Ti**{[($PhCH_2$)$_2NCH_2CH_2$]$RC_2B_9H_9$} **Ti**—N R=H, Me	S, H, B, C, IR, MS	[565]
3,1,2-(Me_2N)$_2$**Ti**{[($PhCH_2$)$_2NCH_2CH_2$]$RC_2B_9H_9$} **Ti**—N R=H, Me	S, H, B, C, IR, MS	[565]
3,1,2-(Me_2N)$_2$(HMe_2N)**Ti**{[($PhCH_2$)$_2NCH_2CH_2$]$RC_2B_9H_9$}} R=H, Me	S, X(H), H, B, C, IR, MS	[565]
3,1,2-L_2**Ti**[($NC_5H_4CH_2$)$RC_2B_9H_9$] **Ti**—N L=NMe_2, Cl; R=H, Me picolyl	S, X(NMe_2), H, B, C, IR	[567]
3,1,2-($OCHMe_2$)$_2$**Ti**[($NC_5H_4CH_2$)$RC_2B_9H_9$] **Ti**—N R=H, Me picolyl	S, X(Me), H, B, C, IR	[567]
3,1,2-(OPh)$_2$**Ti**[($NC_5H_4CH_2$)$RC_2B_9H_9$] (**Ti**—N) picolyl	S, X, H, B, C, IR	[567]
3-**Ti**[1,2-(Me_2NCH_2)$_2C_2B_9H_{10}$]$_2$ **Ti**—N	S, H	[566]
3,1,2-(NHR_2)(NR_2)$_2$**Ti**($C_2B_9H_{11}$) R=Me, Et	S, H, B, C	[568]
3,1,2-[*cyclo*-CyNC(NMe_2)NCy]**Ti**[(CH_2O)(Me_2NCH_2)$C_2B_9H_9$] Cy=*p*-$MeC_6H_4CHMe_2$ **Ti**—N, **Ti**—O reaction with Me_2NH→ (Me_2N)**Ti**[(Me_2NCH_2)CH_2O)$C_2B_9H_9$	S, X, H, B, C	[570]
3,1,2-(Me_2N)$_2$(Me_2NH)**Ti**[(CH_2OCH_2)$C_2B_9H_9$]	S, H, B, C, IR	[571]
3,1,2-(R_2N)**Ti**[(Me_2NCH_2)(OCH_2)$C_2B_9H_9$] R=Me, Et	S, X, H, B, C, IR	[571]
3,1,2-($MeOC_6H_4NH$)**Ti**[(Me_2NCH_2)(OCH_2)$C_2B_9H_9$]	S, H, B, C, IR	[571]
3,1,2-(NC_5H_3Me–NH)(NC_5H_3Me–NH_2)**Ti**[(Me_2NCH_2)–(OCH_2)-$C_2B_9H_9$]	S, X, H, B, C, IR	[571]
[3,1,2-(MeO)**Ti**[Et_2NCH_2)(OCH_2)$C_2B_9H_9$]$_2$ 2 **Ti**—O—**Ti**	S, X, H, B, C, IR	[571]
3,1,2-(Me_2N)$_2$**Ti**[(Me_2NCH_2)$RC_2B_9H_9$] R=H, Me	S, X, H, B, C, IR	[572]
3-**Ti**[1,2-(Me_2NCH_2)$RC_2B_9H_9$]$_2$ R=H, Me	S, X(H), H, B, C, IR	[572]
3,1,2-(RO)$_2$**Ti**[(Me_2NCH_2)$RC_2B_9H_{10}$] R=Ph, MeC_6H_4, $OCHMe_2$	S, X, H, B, C, IR, C_2H_4 polymerization	[572]
3,1,2-(Me_2N)**Ti** [(Me_2NCH_2)(OCH_2)$C_2B_9H_9$] N→Ti, O→Ti catalyst for T-amide catalyzed synthesis of cyclic guanidines from di- and triamines and carbodiimides		[1454]
Zirconium		
Closo-ZrC$_2$B$_9$ clusters		
3,1,2-(Me_2N)(HMe_2N)**Zr**[(HMe_4C_5–CH_2)$C_2B_9H_{10}$)]	S, X, H, B, C	[1434]
3,1,2-(Me_3SiCH_2)$_2$ **Zr**[(HMe_4C_5–CH_2)$C_2B_9H_{10}$)]$^-$	S, X, H, B, C	[1434]

Compound	Information	References
3,1,2-[(σ,σ-$CH_2(NMe_2)$-*o*-C_6H_4] **Zr**[$(HMe_4C_5–CH_2)C_2B_9H_{10}$)]$^-$	S, X, H, B, C	[1434]
3,1,2-[$MeN(CH_2)_n$NMeH]**Zr**[$(CpCMe_2)C_2B_9H_{10}$] n=2,3 **Zr**—Cp	S, X, H, B	[1445]
{3,1,2-[$MeN(CH_2)_2NMe$]**Zr**[$(CpCMe_2)C_2B_9H_{10}$]}$_2Li_2$ **Zr**—Cp	S, X, H, B	[1445]
3,1,2-(THF)Cl**Zr**[$(H_2NCH_2)C_2B_9H_{10}$]	S, H, B, C, IR	[562]
3-$(THF)_2$**Zr**[$(1,2\text{-}o\text{-}C_6H_4CH_2)_2C_2B_9H_9$]$_2$	S, H, B, C, IR	[574]
3,1,2-Cp*$(MeC{=}CMe_2)$**Zr**$(C_2B_9H_{11})$	S, X	[575]
3,1,2-$Cl_2(NEt_2)_2$**Zr**$(C_2B_9H_{11})$	S, H, B, C	[568]
$(THF)_n$$Na_3^{3+}$ 3,1,2-Cl_2**Zr**[$(C_5H_4–CMe_2)C_2B_9H_{10}$]$^{3-}$	S, X, H, B, C, IR	[577]
3,1,2-CpCl**Zr**[$(C_5H_4–CMe_2)C_2B_9H_{10}$]$^-$ $Na(DME)_2^+$	S, X, H, B, C, IR	[577]
3,1,2-(CH_2Ph)**Zr**[$(C_5H_4–CMe_2)C_2B_9H_{10}$]$^-$ $Na(DME)_3^+$ ethylene polymerization catalyst	S, X, H, B, C, IR	[577]
3,1,2-[*cyclo*-$(C_{13}H_9)$P[$N(CHMe_2]_2{=}O-$](NMe$_2$)$_2$**Zr**$(C_2B_9H_{11})$ $C_{13}H_9$=fluorenyl **Zr**—O (FF)	S, X, H, B, C, P, IR	[558]
3,1,2-[$C_6H_3(CHMe_2)_2$–NH](THF)**Zr**[$(C_5H_4–CMe_2)C_2B_9H_{10}$]	S, X, H, B, C, IR	[577]
3,1,2-(THF)$(NEt_2)_2$**Zr**$(C_2B_9H_{11})$	S, H, B, C	[568]
3,1,2-L$_n$$(Me_2N)$**Zr**[$(C_9H_6)C_2B_9H_{10}$] L=DME, THF, C_5H_5N	S, X(THF), H, B, C	[560]
3,1,2-Cl_2**Zr**[$(C_9H_6–Me_2C)C_2B_9H_{10}$]$^-$	S, H, B, C, IR	[578]
3,1,2-LCl**Zr**[$(C_9H_6–Me_2C)C_2B_9H_{10}$]$^-$ L=$PhCH_2$, Cp	S, X, H, B, C, IR	[578]
3,1,2-(THF)L**Zr**[$(C_9H_6–Me_2C)C_2B_9H_{10}$] L=$Me_2C_6H_3NH$, *n*-$C_4H_9O$	S, X, H, B, C, IR	[578]
3,1,2-(THF)(Me_3SiCH_2)**Zr**[$(CH_2)_2NMe(\mu\text{-}CH_2)C_2B_9H_{10}$]	S, X, H, B, C	[579]
{3,1,2-[$MeO(CH_2)_2O$]**Zr**[$(CH_2)_2NMe(\mu\text{-}CH_2)C_2B_9H_{10}$]}$_2$	S, X, H, B, C	[579]
3,1,2-$(Me_2NH)(Me_2N)_2$**Zr**{[$(CHMe_2)_2C_6H_3$–N=CH]$C_2B_9H_{10}$} R=$CHMe_2$, Me imido catalyst for polymerization of C_2H_4 with MAO R=$CHMe_2$	S, X, H, B, C, IR, MS	[563]
3,1,2-Cl**Zr**[Me(C_6H_{10}-O-)$C_2B_9H_9$] **Zr**–O C_6H_{10}=cyclohexyl catalytic polymerization of C_2H_4 with MAO	S, H, B, C, IR	[564]
(polystyryl){3,1,2-Cl**Zr**[Me(C_6H_{10}-O-)$C_2B_9H_9$}$_n$ M–O (C_6H_{10}=cyclohexyl) catalytic polymerization of C_2H_4 with MAO	S, IR	[564]
3,1,2-Cl_2**Zr**{[$(PhCH_2)_2NCH_2CH_2$]$RC_2B_9H_9$} Zr—N R=H, Me	S, H, B, C, IR, MS	[565]
3-**Zr**[1,2-$(Me_2NCH_2)C_2B_9H_{10}$]$_2$ **Zr**—N	S, X, H	[566]
3,1,2-$(Me_2N)_2(Me_2NH)$**Zr**[$(CH_2OCH_2)C_2B_9H_9$]	S, H, B, C, IR	[571]
3,1,2-(Cl)**Zr**[(polystyryl)(C_6H_{10}-2′-NH)$C_2B_9H_9$] **Zr**—N catalyst for polymerization. of C_2H_4 and vinyl chloride with MAO	S, H, B, C, IR, TGA, far IR	[569]
3,1,2-[$(Me_3Si)_2C_5H_3$]**Zr**{[$MeN(CH_2)CH_2CH_2$]$C_2B_9H_{10}$} alkyne insertion	S, X, H, B, C	[1595]
Hafnium		
Closo-HfC$_2$B$_9$ clusters		
3-Cl(THF)**Hf**[1,2-$(PhCH_2)_2C_2B_9H_9$]$_2$·$Na(THF)_3$	S, H, B, C, IR	[574]
3,1,2-Cp*$(MeC{=}CMe_2)$**Hf**$(C_2B_9H_{11})$	S	[575]
[3-Cp***Hf**$(1,2\text{-}C_2B_9H_{11})$]$_2$$(\mu\text{-}CH_2)$	S	[575]
3-**Hf**[1,2-$(Me_2NCH_2)C_2B_9H_{10}$]$_2$ Ti—N	S	[566]
3,1,2-$(Me_2NH)(Me_2N)_2$**Hf**{[$(CHMe_2)_2C_6H_3$–N=CH]$C_2B_9H_{10}$} R=$CHMe_2$, Me imido catalyst for polymerization of C_2H_4 with MAO R=$CHMe_2$	S, X, H, B, C, IR, MS	[563]

Continued

Compound	Information	References
3,1,2-(THF)(Me_3SiCH_2)**Hf**[$(CH_2)_2$NMe(μ-CH_2)$C_2B_9H_{10}$]	S, H, B, C	[579]
3,1,2-Cl_2**Hf**[$(C_9H_6$–$Me_2C)C_2B_9H_{10}]^-$	S, H, B, C, IR	[578]
3,1,2-Cp*__Hf__(7-CHMe)(3,5-$Me_2C_5H_3$)($C_2B_9H_{10}$-7 –)	S, H, C	[582]
$Li(THF)_2^+$ (μ-Cl)$_2$**Hf**[$(Me_4C_5$–$CH_2)C_2B_9H_{10}$)]	S, X, H, B, C	[1434]
Niobium		
Closo-NbC_2B_9 clusters		
2,1,7-$(Me_2N)_3$**Nb**($C_2B_9H_{11}$)	S, H, B, C	[584]
3,1,2-$(Me_2N)_3$**Nb**($C_2B_9H_{11}$)	S, H, B, C	[584]
Tantalum		
Closo-TaC_2B_9 clusters		
3,1,2-(MeC_5H_4)Me_2**Ta**($C_2B_9H_{11}$)	S, H, B, C	[585]
3,1,2-(MeC_5H_4)Cl_2**Ta**($C_2B_9H_{11}$)	S, X, H, B, C	[585]
3-ClMe**Ta**(μ-H)(1,2-$C_2B_9H_{10})_2$	S, X, H, B(2d), C, MS	[587]
3,1,2-$(Me_2N)_3$**Ta**($C_2B_9H_{11}$)	S, X, H, B, C, IR, MS	[583]
2,1,7-$(Me_2N)_3$**Ta**($C_2B_9H_{10}$-3-Me)	S, H, B, C	[588]
3,1,2-$(Me_2N)_3$**Ta**($C_2B_9H_{10}$-4-Me)	S, H, B, C	[588]
[3,1,2-$(Me_2N)_2$**Ta**($C_2B_9H_{11}$)]$_2$(μ-O)	X	[589]
3,1,2-$(Me_2N)_3$**Ta**($C_2B_9H_{11}$)	S, H, B, C	[584]
2,1,12-Br$(Me_2N)_2$**Ta**($C_2B_9H_{11}$)	S, H, B, C, IR	[589]
3,1,2-[*p*-$FC_6H_4C(NMe_2)$═N]$_2$Cl**Ta**($C_2B_9H_{11}$)	S, X, H, B, C, MS	[590]
3,1,2-$(Me_2N)_2$[(C_6H_{13})N═C–NMe_2]**Ta**($C_2B_9H_{11}$)	S, H, B, C, MS	[590]
3,1,2-[2,4-$Me_2C_6H_3$-O]$_3$**Ta**($C_2B_9H_{11}$)	S, X, H, B, C, MS	[590]
3,1,2-$(PhS)_4$**Ta**($C_2B_9H_{11}$)	S, X, H, B, C, MS	[590]
3,1,2-[$(C_6H_{11})_7Si_7O_{12}$)**Ta**($C_2B_9H_{11}$) sesquioxane	S, H, C, IR, MS	[591]
3,1,2-($C_6H_3Me_2$)—N═**Ta**[$(CH_2NHCH_2CH_2)C_2B_9H_9$-*n*-$CHMe_2$] N→**Ta** *n*=3,6,8	S, X(*n*=8), H, C, B	[1499]
3,1,2-($C_6H_3Me_2$)—N═**Ta**—[N(═CH_2)$C_6H_3Me_2$][$Me_2NCH_2CH_2$-$C_2B_9H_9$-*n*-$CHMe_2$] N→**Ta** *n*=3,8	S, X(*n*=8), H, C, B	[1499]
3,1,2-(C_5H_5N)(Me_2N)**Ta**[$(Me_2NCH_2CH_2)C_2B_9H_{11}$] N→**Ta**	S, H, B, C	[1540]
Chromium		
Closo-CrC_2B_9 clusters		
3,1,2-Cp**Cr**($RC_2B_9H_{10}$) R=H, Me, Ph	S, IR, UV	[594]
3,1,2-Cp**Cr**($R_2C_2B_9H_9$) R=H, Me	S, IR, UV	[594]
3,1,2-**Cr**(1,2-$C_2B_9H_{10})_2$-μ(1,1′)-$(CH_2)_4^-$	S, H, B, C, IR	[598]
3,1,2-Cl(NC_5H_4–CH_2^-)**Cr**($C_2B_9H_{10}$)	S, IR, MS	[604]
[3,1,2-(μ-Cl)Cl**Cr**[R(Me_2NCH_2)$C_2B_9H_9$]$_2$ R=H, Me	S, X, IR, MS	[1590]
Molybdenum		
Closo-$MoCB_{10}$ clusters		
2,1-$(CO)_4$**Mo**(OH)$CB_{10}H_{10}^-$	S, B, IR	[606]
2,1-$(CO)_3(Ph_3P)$**Mo**($CB_{10}H_{10}$-7-NMe═CHMe) (*cis, trans*)	S, H, B, C, P, IR	[608]

Compound	Information	References
2,1-$(CO)_3$L**Mo**$(CB_{10}H_{10}$-7-L) L = $[OCH_2]_4$, OEt_2; L′ = PPh_3, $CNCMe_3$	S, X($[OCH_2]_4$), H, B, C	[609]
2,1-(RC≡CR′)$(CO)_2$**Mo**$(CB_{10}H_{11})^-$ R, R′ = H, Ph, CMe_3	S, H, B, C	[609]
2,1-$(Ph_3P)_2(CO)_2$**Mo**$(CB_{10}H_{11})^-$	S, H, B, C	[609]
2,1-$(CO)_3(Ph_3P)$**Mo**$(CB_{10}H_8)$-$(\mu$-H$)_2$-Ag(PPh_3)	S, X, H, B, C, P	[610]
2,1-$(CO)_3(Ph_3P)$**Mo**$(CB_{10}H_8)$-$(\mu$-H$)_3$-Ru LL′L″ L, L′, L″ = Cl, PPh_3	S, X(Cl, $2PPh_3$), H, B, C, P	[610]
2,1-$(Me_3CNC)_4$X**Mo**$(CB_{10}H_{11})$ X = I, Br	S, X(I), H, B, C	[611]
Related derivatives		[611]
2,1-$(CO)_3$**Mo**$[(Me_3CHN)CB_{10}H_{10}]^-$ Cu$(PPh_3)^+$	S, H, B, C, P	[592]
2,1-$(CO)_3(Ph_3PAu)$**Mo**$[(Me_3CHN)CB_{10}H_{10}]$	S, H, B, C, P	[592]
2,1-$(CO)_3$**Mo**$[(\mu$-NHCR═NH$)CB_{10}H_{10}]^-$ R = Me, CMe═CH_2, CH_2Ph, Et	S, X(Me), H, B, C, IR	[612]
Related derivatives		[612]
2,1-$(CO)_2$(HC≡$CCMe_3$)**Mo**$(CB_{10}H_{10}$-3-$NMe_3)$	S, X, H, B, C	[613]
2,1-$(Me_3CNC)_4$Br**Mo**$(CB_{10}H_{10}$-3-X) X = Br, I	S, X(Br), H, B, C	[613]
Exo-$[Cp^*_2Rh_2(\mu$-CO$)]$-2,1-$(CO)_3$**Mo**$(CB_{10}H_{10})$	S, X, H, B, C	[613]
Related derivatives		[613]
2,1-$(CO)_3$**Mo**$[(\mu$-NHCMe═CO→Mo$)CB_{10}H_{10}]^-$	S, B, C, IR	[614]
Related derivatives		[614]
2,1-$(CO)_3$**Mo**$[RCB_{10}H_9]$-μ(2,3)-$N(CH_2)_5^-$ R = H, NH_2	S, X(H), H, B, C, IR	[615]
Related derivatives		[615]
Closo-MoC$_2$B$_9$ clusters (no exo-polyhedral metals)		
1,2,4-(η^7-C_7H_7)**Mo**$(Ph_2C_2B_9H_9)$	S, X, IR	[616]
2,1,8-(η^7-C_7H_7)**Mo**$(Ph_2C_2B_9H_9)$	S, X, IR	[616]
2,1,8-$(CO)_3$I**Mo**$(Me_2C_2B_9H_8$-11-$CH_2C_6H_4Me)^-$	S, H, B, C, IR	[617]
2,1,8-$(CO)_3$Br**Mo**$(Me_2C_2B_9H_9)^-$	S, H, B, C, IR	[1320]
2,1,8-$(CO)_3$I**Mo**$[Ph(OH)C_2B_9H_9]^-$	S, X, H, B, C	[353]
2,1,8-$(Me_3CNC)_2(O)$**Mo**$[Ph(NHCMe_3)C_2B_9H_9]$	S, X, H, B, C	[353]
3,1,2-$(CO)_3$**Mo**$(R_2C_2B_9H_{11})^{2-}$ R = H, Me	S, IR	[618]
3,1,2-$(CO)_3$R**Mo**$(C_2B_9H_{11})^-$ R = H, Me	S, H, IR	[618]
3,1,2-$(CO)_3$**Mo**$(C_2B_9H_{10})$-1-CH_2-[*cyclo*-N_3P_3]$(C_5H_{10}N)_4$Me	S, P, IR	[619]
3,1,2-[$(MeO)_3$P](CO)(MeC_6H_4C)**Mo**$(Me_2C_2B_9H_9)^-$	S, H, B, C, P	[620]
3,1,2-$(CO)_2$(μ-MeC_6H_4C)**Mo**$(C_2B_9H_{11})^-$	S, H, B, C, IR	[621]
3,1,2-μ-MeC_6H_4C═**Mo**$(CO)_2(PMe_3)(Me_2C_2B_9H_9)^-$	S, H, C	[623]
3,1,2-$(CO)_2(C_4H_6)$**Mo**$(R_2C_2B_9H_{11})$	S, H, B, C, P, IR	[624]
Related derivatives		[624]
3,1,2-$(R_2C_2)(Ph_3P)(CO)$**Mo**$(Me_2C_2B_9H_9)$	S, H, B, C, IR	[625]
3,1,2-$(Ph_3P)(CO)_2$**Mo**$[(Me_2C_2B_9H_8$-8-PhC_2PhC(→Mo)]	S, H, B, C, IR	[625]
Related derivatives		[625]
3,1,2-$(C_3H_5)(CO)_2$**Mo**$(R_2C_2B_9H_8$-10-L)$^-$ L = OEt_2, $O(CH_2)_4F$	S, H, B, C, IR	[626]
3,1,2-$(CO)_4$**Mo**$(Me_2C_2B_9H_8$-10-L) L = OEt_2, $O(CH_2)_4F$	S, H, B, C, IR	[626]

Continued

Compound	Information	References
3,1,2-$(Me_3CNC)_3(CO)$**Mo**$(Me_2C_2B_9H_9)$	S, H, B, C, IR	[627]
3,1,2-$(Me_3CNC)_4$**Mo**$(R_2C_2B_9H_9)$ R = Me, H	S, H, B, C, IR	[627]
3,1,2-$(Me_3CNC)_2$\{=C[N(H)CMe_3]-C(Me)=C(Me)[C(O)N(H)-(CMe_3)]}**Mo**$(C_2B_9H_{11})$	S, H, B, C, IR	[627]
3,1,2-$(Me_3CNC)_4$Me**Mo**$(C_2B_9H_{11})^+$	S, H, B, C, IR	[627]
Exo,endo-3,1,2-$(C_3H_5)(CO)$**Mo**$(C_2B_9H_{11})$	S, H, B, C, IR	[628]
3,1,2-$(CH_2{=}CHR)(CO)$**Mo**$(C_2B_9H_{11})^-$ R = Me, Et	S, H, B, C, IR	[628]
Related derivatives		[628]
3,1,2-$(R_2C_2)[P(OMe)_3]_2$**Mo**$(C_2B_9H_{11})$ R = Me, Ph	S, H, B, C, P	[629]
3,1,2-$(RR'C_2)_2[P(OMe)_3]$**Mo**$(C_2B_9H_{11})$ R = Me; R′ = Me, Ph	S, H, B, C, P	[629]
3,1,2-$(Ph_2C_2)[P(OMe)_3]_2$**Mo**$(C_2B_9H_{10}$-8-*cis*-$Ph_2C_2H)$	S, X, H, B, C, P	[629]
3,1,2-$(Ph_2S)_2(CO)_2$**Mo**$(C_2B_9H_{11})^{2-}$	S, X, H, B, IR	[630]
3,1,2-$O[O_2$**Mo**$(C_2B_9H_{11})]_2^{2-}$	S, X, H, B, IR	[630]
5,1,2-$(C_3H_5)(CO)_2$**Mo**$(Ph_2C_2B_9H_9)^-$ (non-icosahedral)	S, X, H, B, IR	[631]
$[(PhS)_2$**Mo**$(C_2B_9H_{11})]_2^{2-}$	S, X, H(2d), B	[632]
5,1,2-$(C_3H_5)(CO)_2$**Mo**$(Ph_2C_2B_9H_8$-3-$SMe_2)$	S, X, H, B, IR	[634]
2,1,8-$(C_3H_5)(CO)_2$**Mo**$(Ph_2C_2B_9H_8$-*n*-$SMe_2)$ *n* = 6, 11	S, X, H, B, IR	[634]
5,1,2-$(CO)_2(C_3H_5)$**Mo**$(Ph_2C_2B_9H_8$-4-$SMe_2)$	S, X, H, B(2d)	[635]
8,1,2-$(CO)_2(C_3H_5)$**Mo**$(Ph_2C_2B_9H_8$-5-$SMe_2)$	S, X, H, B(2d)	[635]
$[3,1,2-(CO)_3$**Mo**$(C_2B_9H_{11})]_2^{2-}$ $N(PPh_3)_2^{2+}$ (**Mo–Mo**)	S, X, H, B, IR	[637]
$[3,1,2-L_2(\mu-S)$**Mo**$(C_2B_9H_{11})]_2^{2-}$ $N(PPh_3)_2^{2+}$ L = O, S **Mo–Mo**	S, X, H, B, IR	[637]
3,1,2-$(CO)_2(R_2C_9H_5)$**Mo**$(C_2B_9H_{10}$-4-$SMe_2)$ indenyl R = H, Me	S, X(Me), H, IR	[1491]
Closo-MoC$_2$B$_9$ clusters with exo-polyhedral metals		
3,1,2-$(Ph_3Sn)(CO)_3$**Mo**$(C_2B_9H_{11})$	S, B, IR, Sn	[599]
$\{3,1,2-(CO)$**Mo**$(C_2B_9H_{10})-1-CH_2PMeN[Mo(CO)_4]$-$P(C_5H_{10}N)_2N\}_n^{2-}$	S, P, IR	[619]
3,1,2-(C_9H_7)Mo$[P(OMe)_3](\mu$-$MeC_6H_4C)(CO)_2$**Mo**$(Me_2C_2B_9H_9)$	S, H, B, C, P, IR	[621]
3,1,2-(C_7H_7)Mo$(\mu$-$MeC_6H_4C)(CO)(L)$**Mo**$(Me_2C_2B_9H_9)$ L = CO, PMe_3	S, H, B, C, P, IR	[621]
3,1,2-$(CO)_7Mo_2(\mu$-$MeC_6H_4C)(CO)_2$**Mo**$(R_2C_2B_9H_9)^-$ R = Me, H	S, H, B, C, P, IR	[639]
3,1,2-$(CO)_2[(C_6H_4MeC{=}W(CO)Cp]$**Mo**$(Me_2C_2B_9H_9)$	S, H, B, C, P, IR	[624]
3,1,2-$(C_4Me_4)(CO)Co(\mu$-$MeC_6H_4C)(CO)_2$**Mo**$(Me_2C_2B_9H_9)$	S, H, B, C, IR	[641]
3,1,2-$(\mu$-$CO)[(Ph_3)_2Rh][P(OMe)_3](MeC_6H_4C)$**Mo**$(Me_2C_2B_9H_9)$	S, H, B, C, P	[620]
$Cp^*_2Rh_2(\mu$-$H)(\mu$-$CO)$-3,1,2-$(CO)_2$**Mo**$(R_2C_2B_9H_9)$ R = H, Me	S, H, B, C, IR	[642]
3,1,2-$(Et_3P)_2Pt(CO)_2$**Mo**$(Me_2C_2B_9H_8{-}CH_2{-}C_6H_4Me)$	S, IR	[644]
3,1,2-$(PMe_2Ph)LPt(\mu$-$CC_6H_4Me)(CO)_2$**Mo**$(Me_2C_2B_9H_8)$ L = CO, PMe_2Ph	S, H, B, C, P, IR	[644]
Related derivatives		[644]

Compound	Information	References
Tungsten		
Closo-WCB$_{10}$ clusters		
2,1-(CO)$_3$(Ph$_3$P)**W**(CB$_{10}$H$_{10}$-7-L) L = OEt$_2$, O(CH$_2$)$_4$, SMe$_2$, S(CH$_2$)$_4$, cyclic ethers and thioethers, NCCMe$_3$, CNCMe$_3$, CNC$_6$H$_3$Me$_2$	S, H, B, C, P	[608]
2,1-(Me$_3$CNC)$_3$I**W**[(Me$_3$CHN)CB$_{10}$H$_{10}$]	S, H, B, C, P	[592]
2,1-(Me$_3$CNC)$_2$(CO)L**W**(CB$_{10}$H$_{11}$) L = Me$_3$C, CO	S, H, B, C, P	[611]
2,1-(CO)$_2$(HC≡CCMe$_3$)**W**(CB$_{10}$H$_{11}$)$^-$	S, X, H, B, C, P, IR	[608]
2,1-(CO)$_3$(Ph$_3$P)**W**(CB$_{10}$H$_{10}$-7-OMeR) R = Et, *n*-C$_4$H$_9$	S, X(*n*-C$_4$H$_9$), H, B, C, P, IR	[608]
Related **W**CB$_{10}$ complexes		[608,645]
Closo-WC$_2$B$_9$ clusters (no exo-polyhedral metals)		
3,1,2-(CO)$_3$Me**W**(C$_2$B$_9$H$_{11}$)$^-$ R = H, Me	S, H, IR	[618]
3,1,2-(CO)$_3$**W**(C$_2$B$_9$H$_{10}$)-1-CH$_2$-[*cyclo*-N$_3$P$_3$](C$_5$H$_{10}$N)$_4$Me	S, P, IR	[619]
3,1,2-μ-MeC$_6$H$_4$C═**W**(CO)$_2$(PMe$_3$)(Me$_2$C$_2$B$_9$H$_9$)$^-$	S, H, C	[623]
3,1,2-(CO)L(RC≡CR)**W**(R$_2$C$_2$B$_9$H$_9$) L = Me$_2$C$_2$, Ph$_2$C$_2$, Ph$_3$P, PMe$_2$Ph; R = Me, Ph	S, H, B, C, P, IR	[624]
Related derivatives		[624]
2,1,8-(CO)$_3$I**W**(Me$_2$C$_2$B$_9$H$_9$)$^-$	S, H, B, C, IR	[617]
Related derivatives		[617]
2,1,8-(CO)$_2$(PhC═CR)**W**(Me$_2$C$_2$B$_9$H$_8$)-11-CH$_2$C$_6$H$_4$Me R = Me, Ph	S, X(Me), H, B, C, IR	[646]
2,1,8-(CO)$_4$**W**(Me$_2$C$_2$B$_9$H$_8$)-11-CH$_2$-R R = *p*-C$_6$H$_4$Me, Me	S, H, B, C, IR	[647]
2,1,8-(CO)$_2$(RC═CPh)**W**(Me$_2$C$_2$B$_9$H$_8$)-11-CH$_2$-C$_6$H$_4$Me R = Ph, Me	S, X(Me), H, B, C, IR	[647]
2,1,8-(CO)$_3$X**W**(Me$_2$C$_2$B$_9$H$_9$)$^-$ X = Cl, I	S, X(I), H, B, C, IR	[647]
3,1,2-(C$_3$H$_5$)(CO)$_2$**W**(R$_2$C$_2$B$_9$H$_8$-10-L) R = H, Me; L = OEt$_2$, OC$_4$H$_6$, SMe$_2$, Ph$_3$P, NC$_5$H$_5$, NC$_5$H$_4$C$_5$H$_4$N	S, H, B, C, IR	[626]
3,1,2-(C$_3$H$_5$)(CO)$_2$**W**(R$_2$C$_2$B$_9$H$_8$-10-L)$^-$ L = OEt$_2$, O(CH$_2$)$_4$F	S, H, B, C, IR	[626]
3,1,2-(CO)$_4$**W**(Me$_2$C$_2$B$_9$H$_8$-10-L) L = OEt$_2$, O(CH$_2$)$_4$F	S, H, B, C, IR	[626]
3,1,2-(Me$_3$CNC)$_4$**W**(R$_2$C$_2$B$_9$H$_9$) R = Me, H	S, H, B, C, IR	[627]
3,1,2-(MeC≡CMe)(CO)**W**(C$_2$B$_9$H$_{11}$)	S, H, B, C, IR	[627]
N(PPh$_3$)$_2^+$ 3,1,2-(CO)$_2$(C$_3$H$_5$)**W**(C$_2$B$_9$H$_{11}$)$^-$	S, H, B, C, IR	[627]
3,1,2-(μ-CC$_6$H$_4$Me)(CO)$_2$**W**(Me$_2$C$_2$B$_9$H$_9$)$^-$	S, H, C, IR	[648,649]
3,1,2-(μ-CC$_6$H$_4$Me)(CO)$_2$**W**(C$_2$B$_9$H$_{11}$)$^-$	S, H, C, IR	[649]
3,1,2-R(CO)$_2$**W**(Me$_2$C$_2$B$_9$H$_9$)$^-$ R = *o*/*p*-MeC$_6$H$_4$C, Me$_2$C$_6$H$_3$C	S, H, C, P, IR	[652]
3,1,2-(CO)$_2$(μ-L)**W**(Me$_2$C$_2$B$_9$H$_9$)$^-$ L = *n*-C$_4$H$_9$-C$_2$C, MeC$_6$H$_4$C	S, H, B, C, IR	[621]
3,1,2-(PhC═CPh)$_2$(CO)**W**(Me$_2$C$_2$B$_9$H$_8$-4-CH$_2$R) R = C$_6$H$_4$Me, Me	S, H, B, C, P, IR	[653]
Related derivatives		[653]
3,1,2-(CO)$_2$(RC)**W**(R′MeC$_2$B$_9$H$_9$)$^-$ R = C$_6$H$_4$Me, Me; R′ = H, Me	S, H, C, IR	[654]
3,1,2-(CO)$_2$(R$_2$PCH$_2$CH$_2$PR$_2$)**W**(Me$_2$C$_2$B$_9$H$_8$-4-Et) R = Ph, Me	S, H, B, C, P, IR	[654]
3,1,2-(CO)$_2$L$_2$**W**(Me$_2$C$_2$B$_9$H$_8$-CH$_2$R) L = CO, Ph$_3$P, PHPh$_2$, CN-*n*-C$_4$H$_9$, PhC$_2$Ph; R = C$_6$H$_4$Me, C$_6$H$_4$OMe	S, H, B, C, P, IR	[655]

Continued

Compound	Information	References
3,1,2-(CO)(PhC═CPh)$_2$**W**($Me_2C_2B_9H_8$-CH_2R) R = C_6H_4Me, C_6H_4OMe	S, H, B, C, P, IR	[655]
Related derivatives		[655]
3,1,2-$(CO)_2$[CpM(CO)](μ-CR)**W**($Me_2C_2B_9H_8$-CH_2R′) M = W, Mo; R = Me, C_6H_4Me; R′ = Me, C_6H_4Me	S, H, B, C, IR	[656]
3,1,2-$(CO)_2$[CpW(CO)PMe_3](μ-CMe)**W**($Me_2C_2B_9H_8$Et)	S, H, B, C, P, IR	[656]
Related derivatives		[656]
3,1,2-$(CO)_2$(RC)**W**($Me_2C_2B_9H_9^-$ R = Me, MeC_6H_4, $MeOC_6H_4$, $MeOCH_2C_6H_4$	S, H, B, C, P	[657]
3,1,2-$(CO)_2$($Ph_2PCH_2PPh_2$)**W**($Me_2C_2B_9H_7$-μ-$(CH_2)_2C_6H_4$	S, H, B, C, P, IR	[657]
3,1,2-(CO)(PhC═CPh)$_2$**W**($Me_2C_2B_9H_7$-μ-$(CH_2)_2C_6H_4$	S, H, B, C, P, IR	[657]
2,1,8-$(CO)_3$(I)**W**($Me_2C_2B_9H_7$-μ-$(CH_2)_2C_6H_4^-$	S, X, H, B, C, P	[657]
2,1,8-$(CO)_2$(Me_3CC═CH)**W**($Me_2C_2B_9H_7$-μ-$(CH_2)_2C_6H_4^-$	S, H, B, C, P	[657]
2,1,8-(CO)(Me_3CC═CH)$_2$**W**($Me_2C_2B_9H_7$-μ-$(CH_2)_2C_6H_4^-$	S, H, B, C, P	[657]
Related derivatives		[657]
3,1,2-μ-MeC_6H_4C═**W**$(CO)_2(PMe_3)(Me_2C_2B_9H_9)^-$	S, H, C	[623]
3-W$(CO)_2$(μ-H)[μ-$C_2(C_6H_4Me)_2$](CO)$_2$**W**$(1,2-C_2B_9H_{11})_2^-$	S, H, C, IR	[658]
3,1,2-$(CO)_2$(μ-H)[μ-C(C_6H_4Me)]**W**($Me_2C_2B_9H_9$)	S, H, C, IR	[658]
3,1,2-(PMe_3)$(CO)_2$[μ-C(C_6H_4Me)]**W**$(Me_2C_2B_9H_9)^-$	S, H, C, P, IR	[658]
3,1,2-(PMe_3)(CO)[ROC═C(C_6H_4Me)]**W**($Me_2C_2B_9H_9$) R = H, Me	S, H, C, P, IR	[658]
3,1,2-$(CO)_2$(Me_3C–C≡C–C)**W**$(Me_2C_2B_9H_9)^-$	S, H, C, IR	[659]
2,1,8-$(CO)_2$(Me_3C–C≡C–C)**W**$(Me_2C_2B_9H_9)^-$	S, H, C, IR	[659]
3,1,2-($NCMe_3$)($NHCMe_3$)(2,6-$Me_2C_6H_3$-O)**W**($C_2B_9H_{11}$)	S, X, H, B, C, MS	[660]
[3,1,2-($NCMe_3$)($NHCMe_3$)$_2$**W**($C_2B_9H_{11}$)]$_2$O	S, H, B, C, MS	[660]
Related derivatives		[660]
Closo-WC_2B_9 clusters with exo-polyhedral metal atoms		
$\{3,1,2-(CO)W(C_2B_9H_{10})$-1-$CH_2$-PMeN$[Mo(CO)_4]P(C_5H_{10}N)_2N\}_n^{2-}$	S, P, IR	[619]
Nido[slipped]-(CO)(Et_2C_2)[$(CO)_2$(indenyl)(μ-CHC_6H_4Me)Mo]-**W**-(η^3-$Me_2C_2B_9H_8$)	S, X, H, B, C, IR	[645]
Related derivatives		[645]
3,1,2-(C_7H_7)Mo(μ-MeC_6H_4C)(CO)(L)**W**($Me_2C_2B_9H_9$) L = CO, PMe_3	S, H, B, C, P, IR	[621]
3,1,2-μ-C_6H_4Me-(CO)CpW-$(CO)_2$**W**($Me_2C_2B_9H_9$)	S, H, B, C, IR	[640]
2,1,7-μ-C_6H_4Me-(CO)CpM-$(CO)_2$**W**($Me_2C_2B_9H_9$) M = Mo, W	S, X(W), H, B, C, IR	[640]
3,1,2-$(CO)_2$[(C_9H_7)(CO)(μ-CC_6H_4Me)M]**W**($Me_2C_2B_9H_9$) M = Mo, W; C_9H_7 = indenyl	S, X, H, B, C, IR	[661]
3,1,2-$(CO)_2$[(C_9H_7)(CO)(μ-CC_6H_4Me)Mo]**W**$(Me_2C_2B_9H_9)^-$ C_9H_7 = indenyl	S, H, B, C, IR	[661]
3,1,2-$(CO)_2$[(C_9H_7)(CO)(μ-CC_6H_4Me)Mo]**W**($C_2B_9H_{11}$) C_9H_7 = indenyl	S, H, B, C, IR	[661]

Compound	Information	References
3,1,2-$(CO)_2[(C_9H_7)(PMe_3)(CO)(\mu\text{-}CC_6H_4Me)M]\mathbf{W}(Me_2C_2B_9H_9)$ M = Mo, W; C_9H_7 = indenyl	S, H, B, C, P, IR	[661]
3,1,2-$(CO)(PMe_3)[(C_9H_7)(CO)(\mu\text{-}CC_6H_4Me)Mo]\mathbf{W}(C_2B_9H_{11})$ C_9H_7 = indenyl	S, H, B, C, P, IR	[661]
3,1,2-$(CO)_2[(C_9H_7)L(\mu\text{-}CC_6H_4Me)W]\mathbf{W}(Me_2C_2B_9H_9)$ C_9H_7 = indenyl L = PMe_3, $N_2(C_6H_4Me)_2$	S, H, B, C, P, IR	[661,664]
Related derivatives		[661]
3,1,2-$(C_9H_7)(PHPh_2)Mo(\mu\text{-}MeCC_6H_4C)(CO)_2\mathbf{W}(Me_2C_2B_9H_9)$	S, H, B, C, IR	[662]
3,1,2-$(C_7H_7)Mo(\mu\text{-}HO\text{–}C{\equiv}C\text{–}C_6H_4Me)(\mu\text{-}Ph_2P)(CO)\mathbf{W}(RC_2B_9H_{10})$ R = H, Me	S, X(R = H), H, B, C, P, IR	[662]
3,1,2-$(C_7H_7)Mo(\mu\text{-}Me\text{–}C{\equiv}C\text{–}C_6H_4Me)(\mu\text{-}CH_2)(\mu\text{-}O)(OEt)\mathbf{W}$-$(Me_2C_2B_9H_9)$	S, X, H, B, C	[663]
3,1,2-$(C_9H_7)Mo(CO)(\mu\text{-}n\text{-}C_4H_9C_2C)(CO)_2\mathbf{W}(Me_2C_2B_9H_9)$	S, H, B, C, IR	[621]
3,1,2-$(C_7H_7)Mo(\mu\text{-}RC)(CO)_2\mathbf{W}(Me_2C_2B_9H_9)$ R = MeC_6H_4, $n\text{-}C_4H_9C_2C$	S, H, B, C, IR	[621]
Related derivatives		[621]
3,1,2-$(CO)_7Mo_2(\mu\text{-}MeC_6H_4C)(CO)_2\mathbf{W}(R_2C_2B_9H_9)^-$ R = Me, H	S, H, B, C, P, IR	[639]
3,1,2-$(CO)_6(Me_3P)Mo_2(\mu\text{-}MeC_6H_4C)(CO)_2\mathbf{W}(R_2C_2B_9H_9)^-$	S, X, H, B, C, IR	[639]
Related derivatives		[639]
3,1,2-$Cp(CO)W(MeC_6H_4)C(CO)_2\mathbf{W}(R_2C_2B_9H_{11})$ R = H, Me	S, H, B, C, IR	[665]
3,1,2-μ-$Cp(CO)W{=}CR\text{–}(CO)_2\mathbf{W}(Me_2C_2B_9H_8\text{–}CH_2\text{–}R')$ R = $C{\equiv}CCMe_3$, Me, $C{\equiv}CC_6H_4Me$; R′ = C_6H_4Me, Me	S, H, B, C	[666]
3,1,2-$[Cp(CO)_2M{=}CR']Au[RC{=}](CO)_2\mathbf{W}(Me_2C_2B_9H_9)$ M = Mo, W; R,R′ = Me, C_6H_4Me	S, H, C, P, IR	[667]
3,1,2-$[Cp(CO)_2M{=}CR']Au[L_2Pt(RC)(CO)_2]\mathbf{W}(Me_2C_2B_9H_9)$ M = Mo, W; R, R′ = Me, C_6H_4Me; $L_2 = \eta^4\text{-}C_8H_{12}$, $2PMe_2Ph$	S, H, C, P, IR	[667]
3,1,2-$[Cp^*Co(CO)_2CpW(RC)]Au[MeC{=}](CO)_2\mathbf{W}(Me_2C_2B_9H_9)$ R = C_6H_4Me	S, H, C, IR	[668]
Related derivatives		[664]
3,1,2-μ-$RC\text{-}(C_7H_7)Mo(CO)(RC{\equiv}CR')\mathbf{W}(Me_2C_2B_9H_9)$ R = C_6H_4Me, $Me_3CC{\equiv}C$; R′ = Me, Et	S, H, C, IR	[669]
Related derivatives		[669]
3,1,2-$[MeC_6H_4CH{-}C_3H(Me_3C)]CpM(CO)_2](CO)_2\mathbf{W}(C_2B_9H_{11})$ M = Mo, W	S, X(W), H, C, IR	[659]
3,1,2-$(CO)_2\mathbf{W}(Me_2C_2B_9H_9)(\mu\text{-}RC)(CO)\mathbf{W}(Me_2C_2B_9H_8\text{–}CH_2\text{–}R)^-$ R = C_6H_4Me, Me **W—W**	S, H, B, C, IR	[670]
Related derivatives		[670]
$[3,1,2\text{-}(\mu\text{-}SPh_2)_2\mathbf{W}(C_2B_9H_{11}]_2^{n-}$ **W—W** n = 2,1,0	S, X, H, B, UV, IR, E, XPS	[636]
3,1,2-$(CO)_6Fe_2(CR)(CO)_2\mathbf{W}(Me_2C_2B_9H_7)^-$ R = Me, Ph, $p\text{-}MeC_6H_4$	S, X(Ph), H, B, C, IR	[671]
3,1,2-$(CO)_6Fe_2(\mu\text{-}AuPPh_3)(CMe)(CO)_2\mathbf{W}(Me_2C_2B_9H_7)$	S, H, B, C, IR	[671]
3,1,2-$[\mu\text{-}(CO)_6Fe_2](CO)_2(\mu\text{-}MeC_6H_4C)\mathbf{W}(Me_2C_2B_9H_7)^-$	S, H, B, C, P	[620]
3,1,2-$[\mu\text{-}(CO)_3Fe)(\mu\text{-}RCH)(\mu\text{-}CO)(CO)_2\mathbf{W}(Me_2C_2B_9H_8)^-$ R = $C_6H_3Me_2$, C_6H_4Me	S, X, H, IR	[672]
3,1,2-$(\mu\text{-}CO)(\mu\text{-}R)(CO)_2[\mu\text{-}(CO)_3Fe]\mathbf{W}(Me_2C_2B_9H_9)^-$ R = $o/p\text{-}MeC_6H_4C$	S, H, B, C, IR	[652]

Continued

Compound	Information	References
Related derivatives		[652]
3,1,2-$(CO)_6Fe_2(\mu\text{-}CH{=}C{=}C\textit{n}\text{–}C_4H_9)(CO)_2(\mu\text{-}CO)\mathbf{W}(Me_2C_2B_9H_8)^-$	S, X, H, B, C, IR	[673]
3,1,2-$(CO)_6Fe_2(\mu\text{-}CH{=}C{=}C\textit{n}\text{–}C_4H_9)(CO)_2(\mu\text{-}COH)\mathbf{W}(Me_2C_2B_9H_8)$	S, X, H, B, C, IR	[673]
3,1,2-$(\mu\text{-}R)(CO)_2[Cp(L)Ru]\mathbf{W}(Me_2C_2B_9H_9)$ R = $C_6H_3Me_2$; L = CO, PMe_2Ph	S, H, B(2d), C, P, IR	[652]
3,1,2-$CpRu(\mu\text{-}H)(CO)(\mu\text{-}CMe)(CO)_2\mathbf{W}(Me_2C_2B_9H_8)$	S, H, B, C, IR	[674]
3,1,2-$CpRu(CO)(\mu\text{-}CC_6H_4Me)(CO)_2\mathbf{W}(Me_2C_2B_9H_8)$	S, X, H, B, C	[674]
Related derivatives		[674]
3,1,2-$(C_4Me_4)(CO)Co(\mu\text{-}RC)(CO)_2\mathbf{W}(Me_2C_2B_9H_9)$ R = MeC_6H_4, Me	S, H, B, C, IR	[641]
3,1,2-$[\mu\text{-}(CO)_4Co_2](\mu\text{-}PhC)(CO)_2\mathbf{W}(Me_2C_2B_9H_9)^-$	S, H, B, C, IR	[672]
3,1,2-$[\mu\text{-}(CO)_6Co_2](\mu\text{-}PhC)(CO)_2\mathbf{W}(Me_2C_2B_9H_9)^-$	S, X, H, IR	[672]
$(\mu\text{-}CR)(CO)_6Co_2$-3,1,2-$\mathbf{W}(Me_2C_2B_9H_9)^-$ 2 B—H—Co R = Me, Ph, *m*/*p*-MeC_6H_4	S, H, B, C, IR	[675]
$(Ph_3P)_2Rh(CO)_2$-3,1,2-$(\mu\text{-}CC_6H_4Me)\mathbf{W}(Me_2C_2B_9H_8\text{-}4\text{-}R)$ R = H, C_7H_9	S, X, H, C, P, IR	[648]
$(\mu\text{-}CO)[(Ph_3)_2Rh](CO)(MeC_6H_4C)$- 3,1,2-$\mathbf{W}(Me_2C_2B_9H_9)$	S, H, B, C, P	[620]
$(Ph_2PCH_2)_2Rh(CO)_2(\mu\text{-}CC_6H_4Me)$-3,1,2-$\mathbf{W}(Me_2C_2B_9H_9)$	S, H, C, P, IR	[649]
$Cp^*_2Rh_2(\mu\text{-}H)(\mu\text{-}CO)\text{-}(CO)_2$-3,1,2-$\mathbf{W}(R_2C_2B_9H_9)$ R = H, Me	S, X(Me), H, B, C, IR	[642]
$L_3(H)Ir(\mu\text{-}MeC_6H_4C)(CO)_2$-3,1,2-$\mathbf{W}(Me_2C_2B_9H_8)$ L = Me_3P, $(MeO)_3P$	S, X, H, B, C, P, IR	[676]
Related derivatives		[676]
3,1,2-$[\mu\text{-}(PEt_3)_2Ir](\mu\text{-}RC)(\mu\text{-}CO)(CO)\mathbf{W}(Me_2C_2B_9H_9)$ R = *p*-C_6H_4Me	S, H, B, P	[672]
3,1,2-$[\mu\text{-}(CO)(H)Ir](Ph_2P_2C_2H_4)](\mu\text{-}RC)(CO)_2\mathbf{W}(Me_2C_2B_9H_8)$ R = *p*-C_6H_4Me	S, H, B, C, P	[672]
3,1,2-$[\mu\text{-}(CO)(H)Ir](N_2[C_5H_4]_2)](\mu\text{-}RC)(CO)_2\mathbf{W}(Me_2C_2B_9H_8)$ R = *p*-C_6H_4Me	S, H, B, C, P	[672]
Related derivatives		[672]
3,1,2-$L_2Pt{=}\mathbf{W}(CO)_3(Me_2C_2B_9H_9)$ L = Ph_3P, Et_3P	S, H, B, C, P, IR	[600]
"*Hypercloso*"-3,1,2-$(Et_3P)_2(\mu\text{-}CO)_2Pt{=}\mathbf{W}(Me_2C_2B_9H_8\text{-}R)$ R = H, Et	S, H, B, C, P, IR	[677]
Exo-$(Et_3P)_2Pt(\text{-}B)(\mu\text{-}H)(CO)_2(PMe_3)$-3,1,2-$\mathbf{W}(Me_2C_2B_9H_7\text{-}p\text{-}CH_2C_6H_4Me)$	S, X, H, B, C, P, IR	[677]
Exo-$(Et_3P)_2Pt(\text{-}B)(\mu\text{-}H)(CO)_3$-3,1,2-$\mathbf{W}(Me_2C_2B_9H_7\text{-}R$ R = H, Et	S, X, H, B, C, P, IR	[677]
Related derivatives		[677]
Exo-$(\mu\text{-}CR)(CO)_2(\eta^4\text{-}C_8H_{12})Pt$-3,1,2-$\mathbf{W}(Me_2C_2B_9H_9)^-$ R = Ph, *p*-MeC_6H_4	S, H, C, P, Pt, IR	[650]
Exo-$[\mu\text{-}(C\text{–}C_6H_3Me_2)(Et_3P)(H)Pt(CO)_2$-3,1,2-$\mathbf{W}(Me_2C_2B_9H_9)$ Pt—H—B	S, H, B, C, P, IR	[678]
Exo-$[\mu\text{-}(C\text{–}C_6H_3Me_2)(Et_3P)Pt(CO)_2$-3,1,2-$\mathbf{W}(Me_2C_2B_9H_8)$ Pt—B two isomers	S, X(1 isomer), H, B, C, P, IR	[678]
Exo-$(\mu\text{-}CO)(\mu\text{-}R)(CO)Pt$-3,1,2-$L\mathbf{W}(Me_2C_2B_9H_9)^-$ R = *o*/*p*-MeC_6H_4C, $Me_2C_6H_3C$; L = $\eta^4\text{-}C_8H_{12}$, $(PMePh_2)_2$	S, H, C, P, Pt, IR	[652]
Exo-$\mu\text{-}(PhMe_2P)_2Pt\text{-}\mu\text{-}MeC_6H_4C$-3,1,2-$(CO)_2\mathbf{W}(Me_2C_2B_9H_9)$ two isomers	S, X, H, B, C, P, IR	[679]

Compound	Information	References
Exo-μ-$(PhMe_2P)_2$Pt-μ-MeC_6H_4C-2,1,7-$(CO)_2$**W**$(Me_2C_2B_9H_9)$ two isomers	S, X, H, B, C, P, IR	[679]
μ-MCl-μ-RC-3,1,2-$(CO)_2$**W**$(Me_2C_2B_9H_9)^-$ M = Cu, Au; R = C_6H_4Me, $Me_3CC{\equiv}C$	S, H, C, IR	[680]
μ-$(CuCl)_2$-μ-RC-3,1,2-$(CO)_2$**W**$(Me_2C_2B_9H_9)^-$ R = C_6H_4Me, $Me_3CC{\equiv}C$	S, H, B, C, IR	[680]
Related derivatives		[680]
3,1,2-(μ-Ph_3PAu)$(CO)_2(MeC_6H_4C)$**W**$(Me_2C_2B_9H_9)$	S, H, B, C, P	[620]
Related derivatives		[620]
3,1,2-(μ-Ph_3PAu-MeC)$(CO)_2$**W**$(Me_2C_2B_9H_9)$	S, X, H, C, P	[649]
3,1,2-μ,μ′-$(CC_6H_4Me)_2$Au-$\left[(CO)_2\mathbf{W}(Me_2C_2B_9H_9)\right]_2^-$	S, H, C, IR	[649]
Related derivatives		[649]
3,1,2-(Ph_3P)Au(μ-CC_6H_4Me)$(CO)_2$**W**$(Me_2C_2B_9H_9)$	S, X, H, C, P	[648]
3,1,2-(μ-Ph_3PAu)R$(CO)_2$**W**$(Me_2C_2B_9H_9)$ R = *o*/*p*-MeC_6H_4C, $Me_2C_6H_3C$	S, H, C, IR	[652]
3,1,2-(μ-CO)(μ-R)(CO)(μ-Ph_3PAu)PtL**W**$(Me_2C_2B_9H_9)$ R = $Me_2C_6H_3C$; L = η^4-C_8H_{12}	S, H, C, P, Pt, IR	[652]
3,1,2-(Ph_3P)Au(μ-RC)$(CO)_2$**W**$(Me_2C_2B_9H_9)$ R = *n*-$C_4H_9C_2$, MeC_6H_4	S, H, B, C, IR	[639]
3,1,2-L_2Pt(L′)Au(μ-RC)$(CO)_2$**W**$(Me_2C_2B_9H_9)$ R = $Me_3CC{\equiv}C$, MeC_6H_4; $L_2 = (PhMe_2P)_2$, η^4-C_8H_{12}; L′ = Ph_3P, Me_2PhP	S, H, B, C, P, IR	[639]
[−Ph_2P–Au(μ-RC)$(CO)_2$-3,1,2-**W**$(Me_2C_2B_9H_9)]_2(CH{=}CH)$ two isomers	S, H, B, C, P, IR	[681]
[–Ph_2P–Au(μ-RC)(η^4-C_8H_{12})Pt$(CO)_2$-3,1,2-**W**$(Me_2C_2B_9H_9)]_2CH_2)_n$ *n* = 2–6; R = *p*-C_6H_4Me	S, H, B, C, P, IR	[681]
Manganese		
Closo-MnCB$_{10}$ clusters		
2,1-$(H_3NCB_{10}H_{10})_2$**Mn**$^{2-}$	S, UV	[593]
2,1-$(CO)_3$**Mn**$(CB_{10}H_{11})^{2-}$	S	[682]
[2,1-$(CO)_3$**Mn**$[(Me_3CNH)CB_{10}H_{10}]^{2-}$	S, H, B, C, IR	[683]
[2,1-$(CO)_3$**Mn**$[(Me_3CNH_2)CB_{10}H_{10}]^-$	S, H, B, C, IR	[683]
[2,1-$(CO)_3$**Mn**$[(Me_3CNH_2)CB_{10}H_9]$-*exo*-Pt$(Ph_2PCH_2CH_2PPh_2)$	S, X, H, B, C, IR	[683]
Closo-MnMCB$_9$ clusters		
8,2,1-$[Ph_2P(CH_2)_2PPh_2]$**Pt**$(CO)_3$**Mn**$(PhCB_9H_9)$	S, H, B, C, P	[359]
Closo-MnPCB$_9$ clusters		
2,1,7-$(CO)_3$**Mn**(Me**P**CB_9H_{10})	S, H, IR	[684]
2,1,7-$(Et_3P)(CO)_2$**Mn**(Me**P**CB_9H_{10})	S, IR	[685]
Closo-MnC$_2$B$_9$ clusters		
3,1,2-$(CO)_3$**Mn**$[(CH{=}CH_2)_2C_2B_9H_9]^-$	S, H, IR	[686]
3,1,2-$(CO)_3$**Mn**$[(1,2\text{-}C_4H_4)C_2B_9H_9]^-$ benzodicarbollide complex	S, H, UV	[687]
3,1,2-$(CO)_3$**Mn**$[(1,2\text{-}C_4H_6)C_2B_9H_9]^-$ dihydrobenzodicarbollide complex	S, H, UV	[687]
$\left\{3,1,2-(CO)_2\mathrm{Br}\mathbf{Mn}[(1,2-C_4H_6)C_2B_9H_9]\right\}_2^{2-}$ dihydrobenzodicarbollide complex	S, H, UV	[687]

Continued

Compound	Information	References
3,1,2-$(CO)_3$**Mn**$(C_2B_9H_{10}$-1-$C_6H_4R)^-$ R = H, *m*/*p*-F	S, F, IR	[688]
3,1,2-$(CO)_3$**Mn**$(C_2B_9H_{10}$-9-$SMe_2)$	S	[707]
3,1,2-$(CO)_3$**Mn**$(C_2B_9H_{10}$–$OC_4H_8L)$ L = PPh_3, NEt_3, NC_5H_4Me, I^-	S, H, B, C	[691]
3,1,2-$(CO)_3$**Mn**$(R_2C_2B_9H_8)$-8-L R = H, L = $O(CH_2)_4$, SMe_2, NMe═CHMe, NMe═CHEt, NHMeEt, NH_2Me, NMe═CHMe, NMe═CHEt; R = Me, L = $O(CH_2)_4$	S, X(H, NMe═CHMe), B, C	[692]
3,1,2-$(CO)_3$**Mn**$(R_2C_2B_9H_8)$-8-X^- R = H, X = Cl, Br, I; R = Me, X = I	S, H, B, C	[692]
3,1,2-$(NO)(CO)_2$**Mn**$(C_2B_9H_{11})$	S, H, B, C	[692]
Related derivatives		[692]
Technetium		
Closo-TcC$_2$B$_9$ clusters		
2,1,8-$(CO)_3^{99m}$**Tc**(8-$RC_2B_9H_{10}$) R = H, C_5H_4N, CH_2–C_5H_4N	S (facile isomerization of 3,1,2 isomer)	[1418]
3,1,2-$(CO)_3^{99m}$**Tc**{[$(CH_2)_2C(O)OH$]$(C_2B_9H_{10})^-$ radiopharmaceutical applications	S, H, B, C, IR, MS	[695]
	S(aqueous F^-), H, B, C, MS, radiochromatograms	[696]
3,1,2-$(CO)_3^{99m}$**Tc**{[$(HO(O)C(CH_2)_2$]$C_2B_9H_{10}\}^-$	S(microwave), H, B, C	[697]
2,1,7-$(CO)_3$**M**{[$HOC(O)$]$(CH_2)_2C_2B_9H_{10}\}^-$ **M** = **^{99}Tc**, **^{99m}Tc**	S(aqueous F^-), H, B, C, IR, MS	[698]
3,1,2-$(CO)_3^{99m}$**Tc**{[$Me_2HN(CH_2)_3$]$C_2B_9H_{10}\}^-$	S(aqueous F^-), H, B, C, IR, MS	[698]
2,1,8-$(CO)_2(NO)$**^{99m}Tc**$(C_2B_9H_{11})$	S, H, B, C, IR, MS, UV	[699]
2,1,8-$(CO)_2(NO)$**^{99m}Tc**$(PhC_2B_9H_{10})$ in vivo/in vitro imaging	S, H, B, C, IR, MS, UV	[699]
2,1,8-$(CO)_2(NO)$**^{99m}Tc**[$(PhCH_2)_2C_2B_9H_9$] R = H, CH_2Ph in vivo/in vitro imaging	S, H, B, C, IR, MS, UV	[699]
2,1,7-$(CO)_3$**^{99m}Tc** (7-$RC_2B_9H_{10}$) R = $(CH_2)_n N(C_2H_4)_2NC_6H_4OMe$ *n* = 1, 3 probe for α-adrenergic receptors	S, H, B, C, IR, MS	[1438]
2,1,8-$(CO)_3$**^{99m}Tc**$(RC_2B_9H_{10})^-$ M = Re, ^{99m}Tc R = CH_2-*cyclo*-1′,4′-NC_4H_8N-C_6H_4-*o*-OMe, C(O)ONH(CH_2)4-1′,4′-NC_4H_8N-C_6H_4-*o*-OMe molecular imaging probes	S	[1465]
Rhenium		
Closo-ReCB$_{10}$ clusters		
2,1-$(CO)_3$**Re**[$(Me_3CNH)CB_{10}H_{10}$ (N—**Re**)	S, H, B, C, P, IR	[683]
[2,1-$(CO)_3$**Re**[$(Me_3CNH)CB_{10}H_{10}]^{2-}$	S, H, B, C, IR	[683]
2,1-$(CO)_2$(L)[$(Ph_2PCH_2CH_2PPh_2)$M]**Re**$(CB_{10}H_{11})$ M = Pt, L = CO; M = Pd, L = CO, $CCMe_3$, $CNC_6H_3Me_2$	S, X(Pd, CO), H, B, C, P	[700]
2,1-Cp*M$(CO)_3$**Re**$(CB_{10}H_{11})$ M = Rh, Ir	S, X(Rh), H, B, C, P, IR	[701]
2,1-$(CO)_3$**Re**[$(Me_3CHN)CB_{10}H_{10}$]	S, H, B, C, IR	[702]
2,1-$(CO)_2$L**Re**[$(Me_3CHN)CB_{10}H_{10}$] L = $Me_3CC{\equiv}C$, NMe_3	S, H, B, C, IR	[702]
2,1-$(CO)_2$L**Re**[$(Me_3CHN)CB_{10}H_9$-3-C(═$CHCMe_3$)CH═$CHCMe_3$]	S, X, H, B, C, IR	[702]
2,1-$(CO)_3$**Re**[$(Me_3CNH)CB_{10}H_{10}]^{2-}$	S, H, B, C, IR	[703]
2,1-$(CO)_2$**Re**[$(Me_3CNH)CB_{10}H_9$]-3-C═CH(CMe_3)-CH═$CHCMe_3$, Ph	S, H, B, C, IR	[703]

Compound	Information	References
Closo-ReC_2B_9 clusters (no exo-polyhedral metals)		
3,1,2-(CO)$_3$**Re**($RC_2B_9H_{10}$)$^-$ R = $CH_2C_5H_4N$, CH_2Ph	S, H, B, C, IR, MS	[705]
2,1,8-(CO)$_3$**Re**($RC_2B_9H_{10}$)$^-$ R = H, $CH_2C_5H_4N$, Ph	S, H, B, C, IR, MS	[705]
2,1,8-(CO)$_3$**Re**($RC_2B_9H_{10}$) R = $CH_2C_5H_4NMe$, $CH_2C_5H_4NH$	S, X, H, B, C, IR, MS	[705]
2,1,8-(CO)$_3$**Re**($PhC_2B_9H_{10}$)	S, H, B, C, binding affinity for estrogen receptor	[694]
2,1,8-(NO)(CO)$_2$**Re**[$(HOC_6H_4)C_2B_9H_{10}$]	S, X, H, B, C, binding affinity for estrogen receptor	[694]
3,1,2-(CO)$_3$**Re**[(*cyclo*-$C_6H11)CH_2C_2B_9H_{10}$)$^-$	S, H, B, C, IR, MS	[705]
3,1,2-(CO)$_3$**Re**($C_2B_9H_{10}$-9-SMe_2)	S	[707]
3,1,2-(CO)$_3$**Re**[(glucosyl-CH_2)$C_2B_9H_{10}$]$^-$	S, H, B, C, IR, MS	[708]
3,1,2-(CO)$_3$**Re**[$(HNC_5H_4$-$CH_2)C_2B_9H_{10}$]	S, H, B, C, IR, MS	[708]
3,1,2-(CO)$_3$**Re**{[$Me_2HN(CH_2)_3$]$C_2B_9H_{10}$]	S, X, H, B, C, IR, MS	[708]
3,1,2-(CO)$_3$**Re**[(C_6H_5)(*p*-$HOC_6H_4)C_2B_9H_9$]$^-$	S, H, B, C, IR, MS	[708]
2,1,7-(CO)$_3$**Re**({[HOC(O)]$_2$$(C_6H_5CH_2)_2H_2N_2$}$C_2B_9H_{10}$]$^-$	S, H, B, C, IR, MS	[708]
3,1,2-(CO)$_3$**Re**($C_2B_9H_{10}$)-8-R R = OC_4H_8, OC_4H_8O	S, H, B(2d), C, IR	[1594]
3,1,2-(CO)$_3$**Re**($C_2B_9H_{10}$)-8-[$O(CH_2)_2]_2X^-$ X = Cl, Br, I, OCH_2Ph, N_3, OH, NH_3^+	S, H, B(2d), C, IR	[1594]
3,1,2-(NO)(CO)$_2$**Re**($C_2B_9H_{10}$)-8-[$O(CH_2)_2]_2$X X = Cl, Br, I, OCH_2Ph, N_3, OH, NH_3+ peptide bioconjugates for drug delivery	S, X(X = I), H, B(2d), C, IR	[1594]
2,1,8-(CO)$_3$**Re**($RC_2B_9H_9$)$^-$ R = H, *p*-C_6H_4OH; R′ = *p*-C_6H_4OH, Ph	S(microwave), H, B, C	[697]
3,1,2-(CO)$_3^{186,188}$**Re**{[$(CH_2)_2C(O)OH$]($C_2B_9H_{10}$)$^-$ radiopharmaceutical applications	S, H, B, C, IR, MS	[695]
3,1,2-(CO)$_3$**Re**($RC_2B_9H_{10}$)$^-$ R = H, $(CH_2)_2C(O)OH$, $(CH_2)_3NHMe$	S(aqueous F^-), H, B, C, MS, radiochromatograms	[696]
2,1,8-(CO)$_2$(NO)**Re**($C_2B_9H_{11}$)	S, H, B, C, IR, MS, UV, fluorescence	[699]
2,1,8-(CO)$_2$(NO)**Re**($PhC_2B_9H_{10}$) in vivo/in vitro imaging	S, H, B, C, IR, MS, UV, fluorescence	[699]
2,1,8-(CO)$_2$(NO)**Re**[$(PhCH_2)_2C_2B_9H_9$] R = H, CH_2Ph in vivo/in vitro imaging	S, H, B, C, IR, MS, UV, fluorescence	[699]
3,1,2-(NO)(CO)$_2$**Re**($C_2B_9H_{11}$)	S, H, B, C, IR	[709]
3,1,2-(NO)LL′**Re**($C_2B_9H_{11}$) L, L′ = CO, PPh_3, PMe_3, $CNCMe_3$, CNxyl	S, H, B, C, IR	[709]
Other related derivatives		[709]
3,1,2-(ON)(OC)Br**Re**($C_2B_9H_{11}$)$^-$	S, H, B, C, IR, UV	[710]
3,1,2-(CO)$_3$**Re**[(CHR)$C_2B_9H_{10}$] R = H, Me	S	[711]
3,1,2-(CO)$_3$**Re**($C_2B_9H_{10}$-1-C_6H_4R)$^-$ R = H, *m*, *p*-F	S, F, IR	[688]
3,1,2-(NO)(CO)$_2$**Re**($R_2C_2B_9H_9$) R = H, Me	S, IR, UV	[712]
3,1,2-(NO)LL′**Re**($C_2B_9H_{11}$) L = CO; L′ = $NCC_6H_3Me_2$, PMe_3; L, L′ = $NCC_6H_3Me_2$	S, IR, UV	[712]
3,1,2-(CO)$_2$(NO)**Re**($C_2B_9H_{11}$)	S, UV, photoluminescence	[365,713]
2,1,7-(CO)$_3$**Re**(7-$RC_2B_9H_{10}$) R = $(CH_2)_nN(C_2H_4)_2NC_6H_4OMe$ *n* = 1, 3 probe for α-adrenergic receptors	S, H, B, C, IR, MS	[1438]
2,1,8-(CO)$_3$**Re**($RC_2B_9H_{10}$)$^-$ R = CH_2-*cyclo*-1′,4′-NC_4H_8N-C_6H_4-*o*-OMe, C(O)ONH(CH_2)4-1′,4′-NC_4H_8N-C_6H_4-*o*-OMe molecular imaging probes	S, X	[1465]

Continued

Compound	Information	References
3,1,2-$(CO)_3$**Re**{[RNH—C(=NH_2)$NHCH_2$]$C_2B_9H_{10}$}$^-$ R = H, Et guanidinyl derivatives	S, H, B, C, IR, MS	[1470]
Closo-ReC$_2$B$_9$ clusters with exo-polyhedral metal atoms		
3,1,2-$(CO)_3$**Re**($C_2B_9H_8$)-*exo*-(μ-H)$_3$-$RuCl(PPh_3)_2$	S, X, H, B, C, P, IR	[714]
3,1,2-$(CO)_3$**Re**($C_2B_9H_8$)-*exo*-(μ-H)$_2$-RhL_2 L$_2$ = $(PPh_3)_2$, $Fe(C_5H_4PPh_2)_2$	S, H, B, C, P, IR	[714]
3,1,2-$(CO)_3(Ph_3PM)$**Re**($C_2B_9H_{11}$) M = Cu, Ag	S, H, B, C, P, IR	[714]
3,1,2-[$Ph_2P(CH_2)_2PPh_2$]Pt—$(CO)_3$**Re**($C_2B_9H_{11}$)$^+$ Pt—H—B 2 isomers	S, X, H, B, C, P, IR	[715]
Related derivatives		[715]
3,1,2-$(CO)_3$**Re**($C_2B_9H_{11}$)–$Ag(C_3H_3N_2)_2CH_2$ (pyrazolyl)	S, X, H, B, C	[716]
[3,1,2-$(CO)_3$**Re**($C_2B_9H_{11}$)–Ag]$_2$$(C_3H_3N_2)_3CH$ (pyrazolyl)	S, X, H, B, C	[716]
[3,1,2-$(CO)_3$**Re**($C_2B_9H_{11}$)–Ag]$_4$	S, X, H, B, C	[716]
Related derivatives		[716]
Iron		
Closo-FeCB$_{10}$ clusters		
2,1-$(H_3NCB_{10}H_{10})_2$**Fe**$^-$	S, UV	[593]
2,1-$(CO)_3$**Fe**($CB_{10}H_{11}$)$^-$	S, H, B, C	[609]
2,1-$(CO)_2$L**Fe**($CB_{10}H_{11}$)$^-$ L = Ph_3P, $CNCMe_3$	S, H, B, C, P	[609]
2,1-Cp**Fe**[(THF)$CB_{10}H_{10}$]	S, B, IR, MS	[318]
2,1-Cp**Fe**[(Et_2O)$CB_{10}H_{10}$]	S, X, B, IR, MS	[318]
2,1-$(CO)_2$**Fe**($CB_{10}H_{10}$)-3-(CH=$CHCMe_3$)$^-$	S, H, B, C, P, IR	[717]
2,1-$(CO)_2$**Fe**($CB_{10}H_9$)-3-(CH=$CHCMe_3$)-5-(NMe=CHMe)	S, X, H, B, C, P, IR	[717]
Related derivatives		[717]
2,1-$(CO)_3$**Fe**($CB_{10}H_8$)-(μ-H)$_3$-$Cu(PPh_3)$	S, H, B, C, P	[610]
2,1-$(CO)_3$**Fe**($CB_{10}H_8$)-(μ-H)$_2$-$Ag(PPh_3)$	S, H, B, C, P	[610]
2,1-$(CO)_2$L**Fe**($CB_{10}H_{10}$)-(μ-H)-$Fe(CO)_2$Cp* L = CO, PPh_3	S, H, B, C, P	[610]
Closo-FeC$_2$B$_9$ clusters		
Mono(dicarbollyl) Fe complexes		
3,1,2-Cp**Fe**($Me_2C_2B_9H_8$)-4-SMe_2	S, H, B, E, Mössbauer	[718]
3,1,2-Cp**Fe**($C_2B_9H_{10}$-8-R) R = OH, $OCOCF_3$	S, X($OCOCF_3$), IR	[724]
3,1,2-Cp**Fe**($C_2B_9H_{10}$-9-Br)	S	[725]
3,1,2-Cp**Fe**($C_2B_9H_{10}$-9-HgCl)	S, B, IR	[725]
3,1,2-Cp**Fe**($C_2B_9H_9$-8-R-9-R′-12-R″) R, R′, R″ = H, H, H; OH, H, H; Cl, H, H; Br, H, H; H, Br, H; Br, Br, H; H, Br, Br	MS(detailed)	[726]
3,1,2-Cp**Fe**[(C_3H_3R)$C_2B_9H_{10}$] R = H, Ph	S, H, C, IR	[727]
3,1,2-Cp**Fe**[(CH=$CHCH_2Ph$)$C_2B_9H_{10}$]	S, IR, MS	[727]
3,1,2-Cp**Fe**($RC_2B_9H_{10}$)$^-$ R = CH=CHMe, CH_2CH=CH_2	S, H, IR	[727]
3,1,2-Cp**Fe**[$C_2B_9H_8(SMe_2)Br_2$]	S, X	[729]
3,1,2-Cp**Fe**[(LCH_2)$C_2B_9H_{10}$] L = Ph_3P, Me_2S, NC_5H_5	S	[1368]
3,1,2-Cp**Fe**($MeC_2B_9H_{10}$)	S, IR, MS	[732]

Compound	Information	References
3,1,2-Cp**Fe**($RC_2B_9H_{10}$) R = CH_2OH, COOH, CH_2Cl, CHO, CH_2COOH, CH_2OAc, CH_2OEt, $CH_2OCH_2CH_2OMe$	S, IR	[732]
3,1,2-Cp**Fe**[CH(OH)R]$C_2B_9H_{10}$] R = Me, Ph	S, IR	[732]
3,1,2-Cp**Fe**{[C(O)Me]$C_2B_9H_{10}$}	S, IR, MS	[732]
3,1,2-Cp**Fe**{[C(O)CH_2D]$C_2B_9H_{10}$}	S, MS	[732]
3,1,2-Cp**Fe**[(HC≡C)$C_2B_9H_{10}$]	S, IR	[734]
3,1,2-Cp**Fe**[(HC≡C)$C_2B_9H_{10}$]$^-$	S, IR	[734]
3,1,2-Cp**Fe**[(MeCO)$C_2B_9H_{10}$]	S, IR	[734]
3,1,2-Cp**Fe**{[CH_2═C(OMe)]$C_2B_9H_{10}$]	S, IR	[734]
3,1,2-Cp**Fe**($RC_2B_9H_{10}$) R = H_2C═C, CMeCl, CMeBr	S, H, IR	[734]
3,1,2-Cp**Fe**[(*m*/*p*-FC_6H_4)$C_2B_9H_{10}$]	S	[735]
3,1,2-Cp**Fe**($C_2B_9H_8$)-4-SMe_2-8-OC(O)$CF_{3,1,2-}$12-HgCl	S, H, B(2d), F	[736]
3,1,2-Cp**Fe**($C_2B_9H_8$)-4-SMe_2-8,9-[OC(O)CF_3]$_2$	S, H, B(2d), F	[736]
3,1,2-Cp**Fe**($C_2B_9H_7$)-4-SMe_2-7,8-[OC(O)CF_3]$_2$-12-HgCl	S, X	[736]
3,1,2-Cp*__Fe__($C_2B_9H_{10}$-4-SMe_2)$^+$L$^-$ L = 2,3-dichloro-5,6-dicyano-*p*-benzoquinone and 7,7′,8,8′-tetracyano-2,3,5,6-tetrafluoroquinodimethane charge-transfer salts	S, X, IR, E, MAG	[738]
3,1,2-(η^6-C_5R_5)**Fe**($C_2B_9H_{10}$-4-SMe_2) R = H, Me	S, H, B	[739]
3,1,2-[η^6-CH_2═C(Me)C_5H_4]**Fe**($C_2B_9H_{11}$) carbonium ion-carborane complex	S, IR	[740]
3,1,2-[η^6-CH_2═C(Me)C_5H_4]**Fe**($C_2B_9H_{11}$)$^-$ carbonium ion-carborane complex	S, H, IR	[740]
3,1,2-[η^6-Me_2(O)$Me_2CC_5H_4$]**Fe**($C_2B_9H_{11}$)$^-$	S, H, IR	[740]
3,1,2-[η^6-Me_2(S)$Me_2CC_5H_4$]**Fe**($C_2B_9H_{11}$)$^-$	S, H, IR	[740]
1,3-[3,1,2-(η^6-C_5H_4)**Fe**($C_2B_9H_{11}$)]$_2$-R R = $C(Me)_2CH$═CMe, $C(Me)_2CH_2C(Me)SMe_2$	S, IR	[740]
3,1,2-(η^5-C_6H_7)**Fe**($C_2B_9H_{10}$-4-SMe_2)	S, H, B	[742]
3,1,2-(η^6-C_6H_6)**Fe**($C_2B_9H_0$-4-SMe_2)$^+$	S, H, B	[742]
3,1,2-(η^5-C_6H_7)**Fe**($C_2B_9H_8$-4-L R = H, Me; L = SMe_2, NMe_3	S, X(H,SMe_2), H, B, E, Mössbauer (H,SMe_2)	[743]
3,1,2-L_3**Fe**($C_2B_9H_{10}$-4-SMe_2)$^+$ L = Me_3CNC, $P(OMe_3)_3$	S, X(H, SMe_2; H, NMe_3), H, B, P, E, Mössbauer (H, SMe_2)	[743]
3-**Fe**(1,2-$C_2B_9H_{10}$-4-SMe_2)$_2$	S, X, H, NMe_3), H, B, P, E, Mössbauer	[743]
3-**Fe**(1,2-$C_2B_9H_{10}$-4-SMe_2)(1,2-$C_2B_9H_{10}$-4-NMe_2)	S, X, H, NMe_3), H, B, P, E, Mössbauer	[743]
3,1,2-(η^6-MeRC_6H_4)**Fe**($C_2B_9H_{11}$) R = H, Me	S, X, H, B	[744]
3,1,2-(η^6-1,3,5-C_6Me_6)**Fe**($C_2B_9H_{11}$)	S, H, B, IR, MS	[745]
2,1,7-(η^6-L)**Fe**($Me_2C_2B_9H_9$) L = C_6H_6, 1,3-$C_6H_4Me_2$, $C_{10}H_8$	S, H, B, IR	[746]
CpFe(*cyclo*-P_5)**Fe**[2,4,12-(N-C_4H_9NH)$C_3B_8H_{10}$]$^+$ 3,1,2-**Co**($C_2B_9H_{11}$)$_2^-$ triple-decker P_5 complex	S, X, H, B	[1422]
3,1,2-(η^5-C_9H_7)**Fe**($C_2B_9H_{11}$) C_9H_7 = indenyl	S, X	[748]
3,1,2-(CO)LL′**Fe**($C_2B_9H_{11}$) L,L′ = CO, PPh_3; PPh_3, MeCN; CO, MeCN; CO, $P(OMe)_3$; $P(OMe)_3$; CO	S, X[PPh_3, PPh_3/MeCN, $P(OMe)_3$, CO], H, B, IR	[750]
3,1,2-(Me_3CNC)$_3$**Fe**($C_2B_9H_0$-4-SMe_2)$^+$	S, X, H, B	[742]

Continued

Compound	Information	References
3,1,2-$(CO)_2$**Fe**$(C_2B_9H_{11})^{2-}$	S, B	[751]
3,1,2-$(CO)_2$**Fe**$(C_2B_9H_{11})^-$ L = Me, $PhCH_2$, Ph_3Sn, COMe	S, X(Ph_3Sn), H, B, IR	[751]
3,1,2-(CO)(η^3-CH_2CRCH_2)**Fe**$(C_2B_9H_{11})^-$ R = H, Me	S, X(H), H, B, IR	[751]
3,1,2-(CO)(COMe)(PMe_3)**Fe**$(C_2B_9H_{11})^-$	S, X, H, B, IR	[751]
3,1,2-L_2**Fe**[$(Me_2NCH_2)C_2B_9H_{10}$] (N → Fe) L = CO, $CNCMe_3$, PMe_3; L_2 = COD	S, X(CO), H, B, C, P(PMe_3), IR	[752]
2,1,7-$(CO)_3$**Fe**$(Me_2C_2B_9H_9)$	S, IR	[746,747]
2,1,7-$[(MeO)_3P]_3$**Fe**$(Me_2C_2B_9H_9)$	S, P	[746,747]
3,1,2-L**Fe**$(C_2B_9H_{11})$ L = 1′,3′,5′-$C_6H_3Me_3$, C_5Me_5H	thermal rearrangement	[1449]
3,1,2-$[Ph_2P(CH_2)_nPPh_2]$Cl**Fe**$(C_2B_9H_{11})$ n = 2,3 catalysis of polymerization of methyl methacrylate (MMA) and styrene (n = 3)	S, X, ESR, IR	[1505]
3,1,2-$[Ph_2P(CH_2)_nPPh_2]$Cl**Fe**$(C_2B_9H_{11})$ n = 2,3 paramagnetic	E, MS(MALDO-TOF)	[1558]
Bis(dicarbollyl) Fe complexes		
3-**Fe**$(1,2-C_2B_9H_{11})_2^-$ Na^+·2L L = bipyridyl, 1,10-phenanthroline	S, IR	[757]
3-**Fe**$(1,2\text{-}C_2B_9H_{11})(1,2\text{-}C_2B_9H_{10}\text{-}8\text{-}C_4H_8O_2)$ dioxane	S, X, H, B, C	[758]
3-**Fe**$(1,2\text{-}C_2B_9H_{11})(1,2\text{-}C_2B_9H_{10}\text{-}8\text{-}OCH_2OCH_2\text{-L})$ L = NC_5H_5, PPh_3, OH, 2-$O(OC_6H_4Me)$	S, X[NC_5H_5, PPh_3, 2-$O(OC_6H_4Me)$], H, B, C	[758]
3-**Fe**$(1,2\text{-}C_2B_9H_{10}\text{-}8\text{-}SEt_2)_2$	S, H, B, IR, UV, E	[759]
3-**Fe**$(1,2\text{-}C_2B_9H_{11})(1,2\text{-}C_2B_9H_{10}\text{-}8\text{-}SEt_2)_2$	S, H, B, IR, UV	[759]
3-**Fe**$[1,2-(C_4H_3S)C_2B_9H_{10}]_2^-$	S, H, B, IR, UV, MS, E, COND, MAG	[760]
3-**Fe**$[1,2-(m/p-FC_6H_4)C_2B_9H_{10}]_2^-$	F	[761]
3-**Fe**$(1,2-Me_2C_2B_9H_9)_2^-$	S, IR, UV, MAG, E	[618]
	ESR	[723]
$[3\text{-}(\mu\text{-}CO)_2$**Fe**$(1,2-C_2B_9H_{11})]_2^{2-}$	S, B, IR	[597]
	X	[765]
$(1,2\text{-}C_2B_9H_{11})$-3-**Fe**$(1',2'\text{-}C_2B_9H_{10})$—8—$O(CH_2)_2$—$O(CH_2)_2N_3^-$ nucleoside conjugate	S(dipolar addition [chemical ligation]), H, B, IR, MS, UV	[766]
3-**Fe**$(1,2-R_2C_2B_9H_9)_2^{2-}$ R = Me, Ph	H, UV	[618]
3-Cp**Fe**$(1,2\text{-}C_2B_9H_{11})$-3-**Fe**$(1,2\text{-}C_2B_9H_{11})^-$	S, B, H, IR, UV, E	[767]
$[Cp^*_2ThR]_2^{2+}$ **Fe**$(1,2\text{-}C_2B_9H_{11})_2^{2-}$ R = H, Me, $SiMe_3$	S, X, H, C	[768]
3-**Fe**$(1,2\text{-}C_2B_9H_{10}\text{-}4\text{-}C_5H_4NCOMe)_2$	S, H, B, MS	[762]
2-**Fe**$(1,7\text{-}C_2B_9H_{10}\text{-}11\text{-}C_5H_5N)_2$	S, H, B, IR, MS	[762]
3-**Fe**$(1,2\text{-}C_2B_9H_{10}\text{-}8\text{-}NEt_3)_2$	S, X, H, B, IR, MS	[762]
3-**Fe**$(1,2\text{-}C_2B_9H_{10}\text{-}8\text{-}Cl)_2^-$ extraction agent for Cs^+ and Sr^{2+}	S	[769]
	X	[770]
3-**Fe**$(1,2\text{-}C_2B_9H_{10}\text{-}4\text{-}SMe_2)_2$ (*meso, dd, ll*)	S, X, H, B, IR, UV, E	[773]
3-**Fe**$(1,2\text{-}C_2B_9H_{10}\text{-}4\text{-}SMe_2)_2^+$ DDQ·$^-$ DDQ = 2,3-Cl_2-5,6-$(CN)_2$-*p*-benzoquinone	S, X, IR, COND	[773]
Meso-commo-3-**Fe**$(1,2\text{-}C_2B_9H_{10}\text{-}4\text{-}SMe_2)_2$	S, X, IR	[774]

Compound	Information	References
dd/ll-3-**Fe**(1,2-$C_2B_9H_{10}$-4-SMe_2)$_2^+$	S	[774]
(TTF)$^+$[3-**Fe**[1,2-(C_4H_3S)$C_2B_9H_{10}$)$_2$]$_2^-$ TTF = tetrathiafulvalenium	S, H, B, IR, UV, MAG, COND, MS	[760]
(ET)$_2^+$ [3-**Fe**[1,2-(C_4H_3S)$C_2B_9H_{10}$)$_2$]$_2^-$ ET = bis(ethylenedithio) tetrathiafulvalenium	S, X, IR, UV, MAG, COND	[603]
[3-**Fe**^{III}(1,2-$C_2B_9H_{11}$)$_2$]$_2$**Fe**^{II}·4L L = bipyridyl, 1,10-phenanthroline	S, IR	[757]
(1,2-$C_2B_9H_{11}$)-3-**Fe**(1,2-$C_2B_9H_{10}$-8-SEt_2)	S, B, ESR	[377]
(C_5H_4NMe)$_2^{2+}$ 2[(1,2-$C_2B_9H_{10}$)**Fe**(1′,2′-$C_2B_9H_{10}$-8′-X)]$^-$ X = H, I probe for sequential voltage tuning	S, E	[1580]
(C_5H_4NMe)$_2^{2+}$ 2[(1,2-$C_2B_9H_{11-n}I_n$)$_2$**Fe**$^-$ n = 0,1 probe for sequential voltage tuning	S, E	[1580]
2-**Fe**(1,7-$C_2B_9H_{10}$)$_2$-μ(8,8′)-$N_2C_3H_3$	S, X, H, B, MS, E	[775]
3-**Fe**(1,2-$C_2B_9H_{10}$)$_2$-μ-CHS_2	S, IR	[776]
3-**Fe**(1,2-$C_2B_9H_{10}$)$_2$-μ(8,8′)-OMe	X	[777]
3-**Fe**(1,2-$C_2B_9H_9$-4-SMe_2-12-HgCl)$_2$	S, X, H, B	[778]
3-**Fe**($C_2B_9H_{10}$)$_2$-8,8′-$Ph_2P(CH_2)_2PPh_2$	S, X, H, B, P, E	[1505]
3-**Fe**($C_2B_9H_{10}$)$_2$-8,8′-$Ph_2P(CH_2)_2PPh_2$ paramagnetic	E, MS(MALDO-TOF)	[1558]
3-**Fe**(1,2-$C_2B_9H_{10}$-8-Br)$_2^-$ diffuse redox mediators for glucose oxidase bioanodes	S, H, B, MS	[1519]
3-**Fe**(1,2-$C_2B_9H_{11}$)(1′,2′-$C_2B_9H_{10}$-8′-Br)$^-$ diffuse redox mediators for glucose oxidase bioanodes	S, H, B, MS	[1519]
Na^+[3-**Fe**(1,2-$C_2B_9H_{11}$)(1′,2′-$C_2B_9H_{10}$)-8′-[$O(CH_2)_2$]$_2$[O-$(CH_2)_4$]$_n$OH]$^-$ n = 1–22 redox-active polymers for surface modification	S, H, B, C, IR, MS, E	[1551]
Na^+[3-**Fe**(1,2-$C_2B_9H_{10}$)$_2$-μ(8,8′)-$(CH_2)_4$[$O(CH_2)_2$]$_2O^-$	S, X, H, B, C, IR, MS, E	[1551]
3-**Fe**(1,2-$C_2B_9H_{11}$)(1′,2′-$C_2B_9H_{10}$-8′-R)$^-$ R = $OC_4H_4^+$, O-$(CH_2)_4NHC_4H_8O^+$, $[O(CH_2)_2]_2NC_4H_8O$, O-$(CH_2)_4PPh_2(CH_2)_2PPh_2^+$	S, X, H, B, C, IR, MS	[1554]
MeC_6H_4N-$C_5H_{11}^+$ 3-**Fe**(1,2-$Me_2C_2B_9H_9$)$_2^-$ cocatalyst with Pd(0) nanoparticles for oxidation of benzyl alcohol and lignin to form aromatic aldehydes	S, H, B, C, IR, MS	[1593]
Closo-FePCB$_9$ clusters		
3-**Fe**(1,2-Me**P**CB_9H_{10})$_2$	S, H, IR, UV, E	[684]
2-**Fe**(1,7-Me**P**CB_9H_{10})$_2$ two isomers	S, H, B, IR, UV, E	[684]
	X	[779]
2-**Fe**(1,7-**P**CB_9H_{10})$_2^{2-}$	S, H, IR, UV, E	[684]
(1,7-Me**P**CB_9H_{10})-2-**Fe**(1,7-**P**CB_9H_{10})$^-$	S, H, IR, E	[684]
2,1,7-Cp**Fe**[(Me)**P**CB_9H_{10}]	S, H, UV, MS	[684]
2-**Fe**{1,7-[$(CO)_5$M]**P**CB_9H_{10}}$_2^{2-}$ M = Cr, Mo	S, H, B, IR	[780]
Closo-FeSCB$_9$ clusters		
1,2,4-(C_4Me_4)**Fe**(**S**CB_9H_9)-4-$NHCMe_3$	S, X, H, B	[392]
Closo-FePC$_2$B$_8$ clusters		
1,2,3,4-Cp*-**Fe**(**P**$C_2B_8H_{10}$)	S, H, B, P, E, Mössbauer	[782]
1,2,3,4-Cp*-**Fe**(**P**$C_2B_8H_{10}$)$^+$	ESR	[782]

Continued

Compound	Information	References
1,2,4,5-Cp*Fe($PC_2B_8H_{10}$)	S, H, B, P, E, Mössbauer	[782]
1,2,4,5-Cp*Fe($PC_2B_8H_{10}$)$^+$	ESR	[782]
1,2,4,5-CpFe($PC_2B_8H_{10}$)	S, X, H	[783]
1,2,4,8-CpFe($PC_2B_8H_{10}$)	S, H, B(2d), C, IR	[783]
CpFe($PC_2B_8H_{10}$) 3 isomers	S, H, B(2d), C, P, IR, MS	[784]
Closo-FeC$_3$B$_8$ clusters		
Mono(tricarbollyl) Fe complexes		
2,1,8,10-CpFe($C_3B_8H_{11}$)	S, H, B, MS	[404]
1,2,3,9-CpFe[(2,3-*cyclo*-CH_2OCH_2)(9-$HNCMe_3$)$C_3B_8H_8$] room temperature polyhedral rearrangement	S, X, H, B	[786]
1,2,4,10-CpFe(*n*-$RC_3B_8H_{10}$) *n* = 2, 10 R = Ph, 1-$C_{10}H_7$, 2-$C_{10}H_7$	S, H, B, C	[1569]
1,2,4,10-CpFe[(2-$CpFeC_5H_4$)(10-Me_3CNH)$C_3B_8H_9$]	S, H, B, E	[787]
1,2,4,12-CpFe(12-$RC_3B_8H_{10}$) R = Ph, 1-$C_{10}H_7$, 2-$C_{10}H_7$	S, H, B, C	[1569]
1,2,4,12-CpFe[(2-$CpFeC_5H_4$)(12-Me_3CNH)$C_3B_8H_9$]	S, H, B, E	[787]
1,2,4,10-CpFe(RR′-10-R″$C_3B_8H_8$) R,R′ = H, Me; R″ = $NHCMe_3$	S, H, B(2d), E	[1421]
2,1,7,10-CpFe($C_3B_8H_{10}$)-*n*-$NHCMe_3$ *n* = 1, 4, 8	S, X, H, B, MS	[404]
2,1,7,9-CpFe($C_3B_8H_{10}$)-9-NH-CH_2-C_6H_4Me	S, H, B, C, MS	[788]
Nido-CpFe($C_3B_8H_{10}$)–$NHCMe_3^{2-}$	S, B(2d)	[789]
2,1,7,9-CpFe($RC_3B_8H_{10}$) R = H_2N, Me_2N, Me_3CHN, Me_3CMeN, MeHN	S, X(Me_3CHN), H, B(2d)	[793]
[1′,7′,9′-(HNC_4H_9)$C_3B_8H_{10}$](3-Fe)[1,2-$LC_2B_9H_{10}$] L = SMe_2, NMe_3	S, X, H, B	[1442]
1,2,4,12-CpFe[12-(2′-$C_{10}H_7$)$C_3B_8H_{10}$]	S, X, H, B, C	[1481]
1,2,4,12-CpFe(2-Ph$C_3B_8H_{10}$)	S, X, H, B, C	[1481]
1,2,4,12-(C_6H_6)Fe{[12-(Me_3C)HN]$C_3B_8H_{10}$}	X	[1530]
1,2,4,12-CpFe[(12-Me_3CNH)$C_3B_8H_{10}$]	S, H, B, C, MS	[423]
	E, Mössbauer	[718]
Bis(tricarbollyl) Fe complexes		
[9,1,7-($NHCMe_3$)$C_3B_8H_{10}$]$_2$Fe	S, X, H, B(2d), MS	[792]
(1,7,9-$RC_3B_8H_{10}$)Fe(1,7,10-$RC_3B_8H_{10}$) R = $NHCMe_3$, NH_2	S, X($NHCMe_3$), H, B(2d)	[795]
Related derivatives		[795]
2,1,7,9-CpFe($C_3B_8H_{10}$)-9-N(CH_2–C_6H_4–CH_2)$_2$N-9-($C_3B_8H_{10}$)FeCp	S, X, H, B, C, MS	[788]
2,1,7,9-CpFe($C_3B_8H_{10}$)-9-NH–CH_2–C_6H_4–CH_2–NH-9-($C_3B_8H_{10}$)-FeCp	S, X, H, B, C, MS	[788]
Nido-FeC$_4$B$_7$ clusters		
(MeC_6H_5)Fe($Et_4C_4B_7H_7$)	S, MS	[59]
CpFe{[8-MeOC(O)]$C_4B_7H_{11}$}	S, X, H, B, C, IR, MS	[797]
Ruthenium		
Closo-RuCB$_{10}$ clusters		
2,1-$(CO)_3$Ru($CB_{10}H_{11}$)$^-$	S, B	[799]
2,1-[$(CO)_6Ru_2$(μ-H)]$(CO)_2$Ru($CB_{10}H_{11}$)	S, H, B, C, IR	[801]

Compound	Information	References
2,1-$[(CO)_6Ru_2](CO)_2$**Ru**$(CB_{10}H_{11})^-$	S, H, B, C, IR	[801]
2,1-$[(CO)_6Ru_2(\mu\text{-}H)(Ph_3P)Au](CO)_2$**Ru**$(CB_{10}H_{10})$	S, X, H, B, C, P, IR	[801]
Related derivatives		[802]
2,1-$[\eta^6\text{-}C_6H_5PPh_2$–RuCl$(PPh_3)](\mu\text{-}H)_2$**Ru**$(CB_{10}H_8R)$ R = H, OMe	S, X(OMe), H, B, P, IR	[803]
Exo-$Ru_2(CO)_4(Ph_2PCH_2PPh_2)$—2,1-$(CO)_2$**Ru**$[(Me_2S)CB_{10}H_{10}]$	S, H, B, C, P, IR	[804]
Exo-$Ru_2(CO)_4(Ph_2PCH_2PPh_2)$—2,1-$(CO)_2$**Ru**$[(MeS)CB_{10}H_{10}]^-$	S, X, H, B, C, P, IR	[804]
Exo-$Ru_2(CO)_4(Ph_2PCH_2PPh_2)$—2,1-$(CO)_2$**Ru**$[(Ph_3PAuMeS)CB_{10}H_{10}]$	S, X, H, B, C, P, IR	[804]
Exo-$Ru_2(CO)_4(\mu\text{-}H)\{(PPh_2)_2[\mu\text{-}Fe(C_5H_4)_2]\}$—2,1-$(CO)_2$**Ru**$[(Me_2S)$-$CB_{10}H_9]$	S, H, B, C, P, IR	[800]
Exo-$Ru_2(CO)_4(\mu\text{-}H)[(PPh_2)_2(\mu\text{-}1',2'\text{-}C_2B_{10}H_{10})]$—2,1-$(CO)_2$**Ru**-$[(Me_2S)CB_{10}H_9]$	S, H, B, C, P, IR	[800]
Exo-$Ru_2(CO)_4(\mu\text{-}SCMe_3)$-$(\mu\text{-}SCMe_3)$—2,1-$(CO)_2$**Ru**$[(Me_2S)CB_{10}H_9]$	S, X, H, B, C, P, IR	[800]
Related derivatives		[800]
Closo-Ru_3CB_8 clusters		
Exo-$Ru_3(CO)_9$-2,7,11,1-$(CO)_6$**Ru**$_3(CB_8H_9)^-$ planar Ru_6	S, X, H, B, C, P, IR	[805]
Exo-$Ru_2(CO)_4L_2$-2,3,4,1-$(CO)_6$**Ru**$_3(PhCB_8H_8)^-$ L = CO, PPh_3 planar Ru_5	S, X(CO), H, B, C, P, IR	[805]
Closo-RuC_2B_9 clusters		
Mono(dicarbollyl) Ru complexes		
3,1,2-L**Ru**$[(Me_2S)C_2B_9H_{10}]$ L = Cp, Cp*	S, H, B	[806]
Related derivatives		[807]
3,1,2-Cp***Ru**$[(ClAuPPh_2)PhC_2B_9H_9]$	S, H, B, P	[808]
3,1,2-$[Ph_2P(CH_2)_4PPh_2]$Hcl**Ru**$(Me_2C_2B_9H_9)$	Controlled synthesis of poly(methyl methacrylate) with amines	[809,810]
3,1,2-$[Ph_2P(CH_2)_4PPh_2]$Cl**Ru**$(Me_2C_2B_9H_9)$	Controlled synthesis of poly(methyl methacrylate) with amines	[809,810]
3,1,2-$[Ph_2P(CH_2)_4PPh\text{-}\mu\text{-}C_6H_4\text{-}]ClRu(Me_2C_2B_9H_8\text{-}10\text{-})$	Controlled synthesis of poly(methyl methacrylate) with amines	[809,810]
2,1,7-$(\eta^6\text{-}C_6H_6)$**Ru**$(C_2B_9H_{11})$	S	[812]
3,1,2-$(\eta^6\text{-}C_6H_6)$**Ru**$(C_2B_9H_{10}\text{-}10\text{-}R)^-$ R = SMe_2, SH	S, X(SH), H, B, C	[813]
3,1,2-$(\eta^6\text{-}C_6H_6)$**Ru**$(C_2B_9H_{10}\text{-}10\text{-}SMe)$	S, X, H, B, C	[813]
3,1,2-$(\eta^6\text{-}L)$**Ru**$(C_2B_9H_{10}\text{-}6\text{-}SMe)^+$ L = C_6H_6, 1,3,5-$C_6Me_3H_3$	S, X(C_6H_6), H, B	[818]
3,1,2-$(\eta^6$-arene$)$**Ru**$(RC_2B_9H_9\text{-}8\text{-}L)^+$ R = H, Me; arene = C_6H_6, $MeC_6H_4CHMe_2$; L = SMe_2, SC_4Me_4,SEtPh	S, X(C_6H_6, H, SMe_2), H, B, C	[819]
3,1,2-$(\eta^6\text{-}C_6H_6)$**Ru**$(RC_2B_9H_8\text{-}8\text{-}SMe_2)^+$	S, H, B, C	[819]
3,1,2-$(\eta^6\text{-}C_6H_6)$**Ru**$(RC_2B_9H_8\text{-}8\text{-}SMe)$	S, H, B, C	[819]
3,1,2-$(\eta^6\text{-}MeC_6H_4CHMe_2)$**Ru**$[(ClAuPPh_2)PhC_2B_9H_9]$	S, X, H, B, P	[808]
3,1,2-$(\eta^6\text{-}MeC_6H_4CHMe_2)$**Ru**$[(PhS)_2C_2B_9H_9]$	S, X, H, B, IR	[820]
3,1,2-$(\eta^6\text{-}MeC_6H_4CHMe_2)$**Ru**$[(PhC{\equiv}C)PhC_2B_9H_9)]$	S, X, H, B, IR	[821]
3,1,2-$(\eta^6\text{-}MeC_6H_4CHMe_2)$**Ru**$[CpFe(C_5H_4)\text{—}C_2B_9H_{10}]$	S, X, H, B	[822]
3,1,2-$(\eta^6\text{-}MeC_6H_4CHMe_2)$**Ru**$[(MeOCH_2)RC_2B_9H_9]$ R = (CH_2OMe, H	S, X(CH_2OMe), H, B, IR	[545]
3,1,2-$(\eta^6\text{-}MeC_6H_4CHMe_2)$**Ru**$(RR'C_2B_9H_9)$ R, R′ = H, H; H, Ph; Me, Ph	S, X(Me, Ph), H, B, IR	[823]

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Compound	Information	References
2,1,8-($MeC_6H_4CHMe_2$)**Ru**[8-(1′-1′,2′-$C_2B_9H_{11}$)$C_2B_9H_{10}$]	S, X, H, B, MS	[1570]
2,1,12-(η^6-$MeC_6H_4CHMe_2$)**Ru**($C_2B_9H_{11}$)	S, X, H, B	[1419]
3,1,2-(η^6-1′,3′,5′-$C_6H_3Me_3$)**Ru**($PhC_2B_9H_{10}$)	S, X, H, B, IR	[823]
2,1,8-(η^4-C_8H_{12})**Ru**[(8-SMe_2)$C_2B_9H_9$-11-SMe_2]$^+$ BF_4^-	S, X, B	[824]
3,1,2-$(CO)_3$**Ru**($C_2B_9H_{11}$)·0.5C_6H_6	S, H, B, IR, MS, UV	[827]
3,1,2-$(CO)_3$**Ru**($Me_2C_2B_9H_9$)	S, H, B, C, P, IR	[828]
3,1,2-$(CO)_2(CO_2Me)$**Ru**($C_2B_9H_{11}$)$^-$	S, H, B, IR	[826]
Related derivatives		[826]
3,1,2-$(CO)_2$**Ru**[($MeOCH_2$)$C_2B_9H_{10}$]$^-$	S, H, B, IR	[545]
3,1,2-$(CO)_2$(THF)**Ru**($C_2B_9H_{11}$)	S, H, B, C, IR	[825]
3,1,2-$(CO)_2$(MeC═CHMe)**Ru**($C_2B_9H_{11}$)$^-$	S, H, B, C, IR	[829]
3,1,2-$(CO)_2$(MeC═CMePPh_3)**Ru**($C_2B_9H_{11}$)	S, H, B, C, IR	[829]
3,1,2-$(CO)_2$**Ru**[$C_2B_9H_{10}$-7-CH(PMe_2Ph)–CH_{2-}] Ru-CH_2	S, X, H, B, C, IR	[829]
Related derivatives		[829]
μ-$Ru_2(CO)_6$-3,1,2-$(CO)_2$**Ru**($Me_2C_2B_9H_7$-μ-H_2)	S, H, B, C, P, IR	[828]
μ-$Ru_2(CO)_5(PR_3)$H-3,1,2-$(CO)_2$**Ru**($Me_2C_2B_9H_7$-μ-H) R = PPh_3, $P(MeC_6H_4CHMe_2)_3$	S, H, B, C, P, IR	[828]
μ-$Ru_2(CO)_4(PR_3)_2$H]-3,1,2-$(CO)_2$**Ru**($Me_2C_2B_9H_7$-μ-H) R = PPh_3, PMe_2Ph	S, X(PMe_2Ph), H, B, C, P, IR	[828]
Related derivatives		[828]
3,1,2-I$(CO)_2$**Ru**($Me_2C_2B_9H_9$)	S, H, B, C, IR	[830]
3,1,2-$(CO)_2$**Ru**($Me_2C_2B_9H_8$-8-CH═CH$SiMe_3$)	S, H, B, C, IR	[830]
3,1,2-(MeC≡CPh)$(CO)_2$**Ru**($Me_2C_2B_9H_{11}$)	S, X, H, B, C, P, IR	[831]
3,1,2-L$(CO)_2$**Ru**($Me_2C_2B_9H_{11}$) L = $AsPh_3$, $SbPh_3$, S═P(Ph_2)CH_2P-(Ph_2)═S	S, H, B, C, P, IR	[831]
3,1,2-$(Ph_3P)_2H_2$**Ru**($C_2B_9H_{11}$)	S, H, B, IR	[832,833]
3,1,2-$(Ph_3P)_2$HX**Ru**($C_2B_9H_{11}$) X = Cl, CO	S, IR	[832]
3,1,2-$(Ph_3P)_2$H**Ru**($C_2B_9H_{10}$)-7-NC_5H_5	S, H, IR	[832,835]
	B	[832]
	P	[835]
3,1,2-$(Ph_3P)_2$H**Ru**($C_2B_9H_{10}$)-8-PPh_2R R = Ph, Me	S, X(Ph), H, B, C, P, IR	[836]
3,1,2-$(Ph_3P)_2$H**Ru**(RR′$C_2B_9H_8$-8-SR″R‴) R, R′ = H, Me; R″, R‴ = Me, Et, Ph, $(CH_2)_4$ catalysts for radical polymerization of styrene and *n*-butyl acrylate	S	[1366]
3,1,2-$(Ph_3P)_2(CO)$**Ru**($C_2B_9H_{11}$)	S, H, IR	[827]
3,1,2-$(Ph_3P)_2$Cl**Ru**($C_2B_9H_{11}$)$^-$	S, X, H, B, P, IR	[838]
3,1,2-(CO)L(Ph_3P)**Ru**($C_2B_9H_{11}$) L = CO, PPh_3	S, H, P, IR	[838]
(Ph_3P)(CO)Rh(μ-H)—3,1,2-$(Ph_3P)_2$H**Ru**($C_2B_9H_{11}$)	S, X, H, B, P, IR, MS	[838]
(η^4-L)Rh(μ-H)-3,1,2-$(Ph_3P)_2$**Ru**($C_2B_9H_{11}$) L = C_8H_{12}, C_7H_8	S, X(C_8H_{12}), H, B, C, P, IR, MS	[838]
2,1,7-$(Ph_3P)_2$**Ru**($C_2B_9H_{11}$)	H, B	[832,833]
	IR	[832]

Compound	Information	References
2,1,7-$(Ph_3P)_2H_2$**Ru**$(C_2B_9H_{11})$	B, IR	[832,833]
3,1,2-$(Ph_3P)_2(NO_3)$**Ru**$(C_2B_9H_{11})\cdot 2.2CH_2Cl_2$	S, X, H, B, P	[1581]
3,1,2-ClH(*cyclo*-$Ph_2PCHMeCH_2CHMePPh_2$)**Ru**$(C_2B_9H_{11})$	S, H, B, P, IR	[839]
3,1,2-Cl(*cyclo*-$Ph_2PCHMeCH_2CHMePPh_2$)**Ru**$(C_2B_9H_{11})$	S, X, IR	[839]
3,1,2-[*cyclo*-$Ph(C_6H_4)(PCHMeCH_2CHMePPh_2)$-Cl**Ru**$(C_2B_9H_{10}]$ B-C_6H_4	S, X, IR	[839]
3,1,2-[$Ph(C_6H_4)P(CH_2)_3PPh_2$]Cl**Ru**$(Me_2C_2B_9H_8$-8-) B—C_6H_4—P catalyst for methyl methacrylate polymerization	S, X, ESR	[840]
3,1,2-$(Ph_3P)_2H(Cl)$**Ru**$(C_2B_9H_{11})$ catalyst for methyl methacrylate polymerization	S	[840]
3,1,2-[$Ph_2P(CH_2)_4PPh_2$]H(Cl)**Ru**$(C_2B_9H_{11})$ catalyst for methyl methacrylate polymerization	S	[840]
3,1,2-Cl(H)($Ph_2PCHMeCH_2CHMe$)**Ru**$(C_2B_9H_{11})$	S, H, B, P, IR	[841]
3,1,2-$(Ph_3P)(C_5H_3N)_2$**Ru**$(C_2B_9H_{11})$	S (phosphine displacement)	[1411]
3,1,2-(Ph_3P)(2-phen)**Ru**$(C_2B_9H_{11})$	S (phosphine displacement)	[1411]
2,1,7-$(Ph_3P)_2(CO)$**Ru**$(C_2B_9H_{11})$	S, H, P	[835]
2,1,7-$(Ph_3P)_2$HI**Ru**$(C_2B_9H_{11})$ R = Cl, CO	S, IR	[832]
3,1,2-[$Ph_2P(CH_2)_nPPh_2$](H)Cl**Ru**$(C_2B_9H_{11})$ n = 3, 4	S, H, B, C, P, IR	[842]
3,1,2-(CO)(Ph_3P)**Ru**$(C_2B_9H_{10}$-4-CH═CHR) R = Ph, H	S, X(Ph), H, B, C, P, IR	[843]
3,1,2-L(CO)(Ph_3P)**Ru**$(C_2B_9H_{11})$ L = $CNCMe_3$, THF	S, H, B, C, P, IR	[843]
3,1,2-(CO)$(Ph_3P)(CNCMe_3)$**Ru**$(C_2B_9H_{10}$-4-CH═CH_2)	S, X, H, B, C, P, IR	[843]
Related derivatives		[843]
3,1,2-[$Ph_2P(CH_2)_nPPh_2$]ClH**Ru**$(C_2B_9H_{11})$ n = 3–5	S, H, B, P	[1579]
3,1,2-[$PhP(CH_2)_nPPh_2$]Br**Ru**$(C_2B_9H_{10}$-10-$C_6H_4)$ P—C_6H_4 n = 3–5	S, X (n = 4), H, B, P	[1579]
3,1,2-[$P(CH_2)_nPPh_2$]BrRu[C $C_2B_9H_9$-9,10-$(C_6H_4)_2$ 2 P—C_6H_4 n = 3,4	S,X(n = 3), H, B, P	[1579]
3,1,2-LH(Ph_3P)**Ru**$(C_2B_9H_{11})^-$ L = Ph_3P, CO	S, H, B, C, P	[844]
3,1,2-[$S_3(C_2H_4)_3$]**Ru**$(PhRC_2B_9H_9)$ R = H, Ph	S, X, H, B, C	[845]
Exo-[(CO)(Ph_3P)Rh(μ-H)]—3,1,2-$(Ph_3P)_2$**Ru**$(C_2B_9H_{11})$	S, H, B, C, P	[844]
Exo-[$(Ph_3P)_2$RuH(μ-H)]—3,1,2-$(Ph_3P)_2$**Ru**$(C_2B_9H_{11})$	S, H, B, C, P	[844]
Exo-[$(CO)_3(Ph_3P)$Ru(μ-H)]—3,1,2-(Ph_3P)(CO)**Ru**$(C_2B_9H_{10})$	S, X, H, B, C, P	[844]
Exo-[(Ph_3P)Cu(μ-H)]—3,1,2-(Ph_3P)L**Ru**$(C_2B_9H_{11})$ L = Ph_3P, CO	S, X, H, B, C, P	[844]
Exo-[(Ph_3P)Au(u-H)]—3,1,2-(Ph_3P)L**Ru**$(C_2B_9H_{11})$ L = Ph_3P, CO	S, X, H, B, C, P	[844]
Related derivatives		[844]
Exo-(Ph_3P)Cu(μ-H)—3,1,2-[$(Ph_2P(CH_2)_4PPh_2$]**Ru**$(C_2B_9H_{11})$	S, X, H, B	[1429]
Exo-$Cp(CO)_2W$═$C(C_6H_4Me)$—3,1,2-$(CO)_2$**Ru**$(C_2B_9H_{11})$	X	[846]
3,1,2-L$(N_2C_{10}H_6R_2)$**Ru**$(C_2B_9H_{11})$ L = CO, NCMe; R = H, $(CH_2)_8Me$, CMe_3 $N_2C_{10}H_6$ = bipyridine	S, X(CO, H), H, B, C, IR, UV, ESR(CO, Me), E	[847]
Exo-$HB(pz)_3(CO)_2$M═$C(C_6H_4Me)$—3,1,2-$(CO)_2$**Ru**$(C_2B_9H_{11})$ M = Mo, W; pz = pyrazolyl	S, X(W), H, B, C, IR	[846]
3,1,2-Cl$(Ph_3P)_2$**Ru**$(C_2B_9H_{10})$-10-(9-Hg-1,2-$C_2B_{10}H_{11}$)	S, X, H, B, P	[848]
3,1,2-(CO)L**Ru**$[(Me_2NCH_2)C_2B_9H_{10}]$ N→**Ru** L = CO, MeCN	S, X, H, B, C, IR	[752]

Continued

Compound	Information	References
3,1,2-[Cp(CO)$_2$M═CC$_6$H$_4$Me](CO)$_2$**Ru**(C$_2$B$_9$H$_{11}$) M = W, Mo	S, H, B, C, IR	[849]
3,1,2-[Cp(O)W–CHC$_6$H$_4$Me](CO)$_2$**Ru**(R$_2$C$_2$B$_9$H$_8$) R = H, Me; two isomers each	S, X(H), H, B, C, IR	[849]
Related derivatives		[849]
Exo-(η^4-C$_8$H$_{12}$)Ir(μ-H)—3,1,2-(Ph$_3$P)$_2$**Ru**(C$_2$B$_9$H$_{11}$)	S, H, B, C, P, IR	[850]
3,1,2-(η^6-C$_5$H$_5$BMe)**Ru**(C$_2$B$_9$H$_{11}$) boratabenzene complex	S, X	[1425]
3,1,2-(C$_6$H$_6$)**Ru**(R$_2$C$_2$B$_9$H$_9$)$^+$ R = H, Me C$_6$H$_6$ exchange with arenes		[1437]
3,1,2-H[Ph$_2$P(CH$_2$)$_4$PPh$_2$]Cl(C$_2$B$_9$H$_{11}$)	Thermal rearrangement	[1451]
3,1,2-[Ph$_2$P(CH$_2$)$_4$PPh$_2$]Cl**Ru**(C$_2$B$_9$H$_{11}$) catalyst for radical polymerization of methyl methacrylate	S, X, H, ESR	[1451]
3,1,2-[Ph$_2$P(CH$_2$)$_4$PPh(C$_6$H$_4$)]**Ru**(C$_2$B$_9$H$_{10}$) C$_6$H$_4$—B(8) catalyst for radical polymerization of methyl methacrylate	S, X, H, ESR	[1451]
3,1,2-[Ph$_2$P(CH$_2$)$_4$P(C$_6$H$_4$)$_2$]**Ru**(C$_2$B$_9$H$_{10}$) 2 C$_6$H$_4$—B catalyst for radical polymerization of methyl methacrylate	S, X, H, IR, ESR	[1451]
3,1,2-Cl[Ph$_2$P(CH$_2$)$_4$P(C$_6$H$_4$)$_2$]**Ru**(C$_2$B$_9$H$_{10}$) C$_6$H$_4$—B catalyst for controlled radical polymerization of Me methacrylate to poly(methyl methacrylate) (PMMA)	S(as in ref. [1477])	[1523]
3,1,2-(H)[Ph$_2$P(CH$_2$)$_5$PPh$_2$]Cl**Ru**(R$_2$C$_2$B$_9$H$_{11}$)	S, H, B, P	[1477]
3,1,2-[Ph$_2$P(CH$_2$)$_5$PPh$_2$]Cl**Ru**(R$_2$C$_2$B$_9$H$_{11}$)	S, H, B, P, ESR	[1477]
3,1,2-[Ph$_2$P(CH$_2$)$_5$PPh(C$_6$H$_4$)]Cl**Ru**(R$_2$C$_2$B$_9$H9-R) R = H, Cl	S, H, B, P, ESR	[1477]
3,1,2-[Ph$_2$P(CH$_2$)$_5$P(C$_6$H$_4$)$_2$]Cl**Ru**(R$_2$C$_2$B$_9$H$_9$) 2 Ph—B	S, H, B, P, ESR	[1477]
3,1 2-[Ph$_2$P(CH$_2$)$_n$PPh$_2$]Cl**Ru**(C$_2$B$_9$H$_{11}$) n = 2–5	E(catalysis in methylmethacrylate polymerization)	[1515]
3,1 2-[Ph$_2$P(CH$_2$)$_n$PPh(8-C$_6$H$_4$)]Cl**Ru**(C$_2$B$_9$H$_{10}$) n = 3–5	E(catalysis in methylmethacrylate polymerization)	[1515]
3,1 2-[Ph$_2$P(CH$_2$)$_n$P(7-C$_6$H$_4$)(8-C$_6$H$_4$)]Cl**Ru**(C$_2$B$_9$H$_9$) n = 4,5	E(catalysis in methylmethacrylate polymerization)	[1515]
3,1 2-[Ph$_2$P(CH$_2$)$_n$PPh(8-C$_6$H$_4$)]Cl**Ru**(Me$_2$C$_2$B$_9$H$_8$) n = 3,4	E(catalysis in methylmethacrylate polymerization)	[1515]
3,1 2-[Ph$_2$P(CH$_2$)$_4$PPh$_2$]Cl**Ru**(C$_2$B$_9$H$_{11}$	Matrix-assisted laser desorption/ionization TOF MS	[1516]
3,1 2-[Ph$_2$P(CH$_2$)$_4$PPh(8-C$_6$H$_4$)]Cl**Ru**(C$_2$B$_9$H$_{10}$)	Matrix-assisted laser desorption/ionization TOF MS	[1516]
3,1 2-[Ph$_2$P(CH$_2$)$_4$P(7-C$_6$H$_4$)(8-C6H4)]Cl**Ru**(C$_2$B$_9$H$_9$)	Matrix-assisted laser desorption/ionization TOF MS	[1516]
3,1 2-[Ph$_2$P(CH$_2$)$_4$PPh(8-C$_6$H$_4$)]Cl**Ru**(Me$_2$C$_2$B$_9$H$_8$)	Matrix-assisted laser desorption/ionization TOF MS	[1516]
3,1 2-[Ph$_2$P(CH$_2$)$_4$PPh(8-C$_6$H$_4$)]Cl**Ru**(C$_2$B$_9$H$_9$-7-Cl)	Matrix-assisted laser desorption/ionization TOF MS	[1516]
3,1,2-[Ph$_2$P(CH$_2$)$_5$PPh$_2$]Cl**Ru**(R$_2$C$_2$B$_9$H$_{11}$)	S(as in N74), catalyst for controlled radical polymerization of Me methacrylate to poly (methyl methacrylate) (PMMA)	[1523]
3,1,2-[Ph$_2$P(CH$_2$)$_5$PPh(C$_6$H$_4$)]Cl**Ru**(R$_2$C$_2$B$_9$H9-R) R = H, Cl	S(as in N74), catalyst for controlled radical polymerization of Me methacrylate to poly (methyl methacrylate) (PMMA)	[1523]

Compound	Information	References
3,1,2-[$Ph_2P(CH_2)_5P(C_6H_4)_2$]Cl**Ru**($R_2C_2B_9H_9$) 2 Ph—B	S(as in ref. 1477), catalyst for controlled radical polymerization of Me methacrylate to poly(methyl methacrylate) (PMMA)	[1523]
3,1,2-(O_2)[$Ph_2Ph(CH_2)_n$PPh-C_6H_4]Cl**Ru**($Me_2C_2B_9H_9$) C_6H_4—B(8) *n*=3, 4	S, X, H(2d), P, C, IR	[1539]
3,1,2-(C_6H_6)**Ru**($Me_2C_2B_9H_8$)-*n*-SMe_2^+ *n*=4, 8	S, H, B	[1592]
3,1,2-(C_6H_6)**Ru**($Me_2C_2B_9H_8$)-*n*-SMe *n*=4, 8	S, H, B	[1592]
Bis(dicarbollyl) Ru complexes		
Tl^+ [3,1,2-$(CO)_2$**Ru**($Me_2C_2B_9H_9$)]$_2^-$	S, X, H, B, C, IR	[830]
[3,1,2-$(CO)_2$**Ru**($C_2B_9H_{11}$)]$_2$(Ph_2P)$_2CH_2$	S, X, H, B, C, P, IR	[831]
trans-[(1,2-$MeC_6H_4CHMe_2$)$_3$-**Ru**(1,2-$PhC_2B_9H_9$)]$_2$CH═CH	S, X, H, B	[851]
[3,1,2-(CO)(μ-CO)**Ru**($C_2B_9H_{11}$)]$_2^{2-}$	S, H, B, IR	[826]
Closo-RuC$_3$B$_8$ clusters		
[9,1,7-($NHCMe_3$)$C_3B_8H_{10}$]$_2$**Ru**	S, X, H, B(2d), MS	[792]
1,2,4,12-Cp***Ru**[(12-Me_3CNH)$C_3B_8H_{10}$]	S, X, H, B, C, MS	[423]
1,2,4,10-Cp***Ru**[(12-Me_3CNH)$C_3B_8H_{10}$]	S	[423]
1,2,4,12-($C_6H_3Me_3$)**Ru**[(12-Me_3CNH)$C_3B_8H_{10}$]	S, H, B	[693]
Osmium		
Closo-OsCB$_{10}$ clusters		
2,1-$(CO)_3$**Os**($CB_{10}H_{10}$)-5-NMe_3	S, X, H, B, C, UV	[799]
Exo-$Os_2(CO)_6$-2,1-$(CO)_2$**Os**($CB_{10}H_{11}$)$^-$	S, H, B, C, UV	[799]
Exo-$Os_2(CO)_6$(μ-H)-2,1-$(CO)_2$**Os**($CB_{10}H_{11}$)	S, H, B, C, UV	[799]
μ-[$Os(CO)_3$]$_2$-2,1-$(CO)_2$**Os**($CB_{10}H_{10}$)-7-NMe_3	S, X, H, B, IR	[852]
Closo-OsC$_2$B$_9$ clusters		
3,1,2-(Ph_3P)$_2$(H)$_2$**Os**($Me_2C_2B_9H_9$)	S, X(Cl), H, B, P, IR	[853]
2,1,7-(Ph_3P)$_2$(H)$_2$**Os**($C_2B_9H_{11}$)	S, X, H, B, P, IR	[854]
Cobalt		
Closo-CoCB$_{10}$ clusters		
2,1-**Co**($CB_{10}H_{11}$)$_2^{2-}$	S, H, IR, UV	[593]
2,1-**Co**[(H_3N)$CB_{10}H_{10}$]$_2^-$	S, UV	[593]
2,1-**Co**($CB_{10}H_{10}$—NH_2Et)$_2^-$	S	[682]
2,1-Cp**Co**{[(Me_3Si)$_2$CH]$CB_{10}H_9$}-*n*-SMe_2 *n*=7,12	S, H, B, IR, MS	[860]
2,1-Cp**Co**{[(Me_3Si)$_2$CH]$CB_{10}H_9$}-(C_5H_4)CoCp	S, H, B, MS	[860]
2,1-(MeC_6H_5)**Co**{[(Me_3Si)$_2$CH]$CB_{10}H_{10}$}	S, X, H, B, IR, MS	[860]
2,1-(MeC_6H_5)**Co**[(Me_3CNH_2)$CB_{10}H_{10}$]	S, X, H, B, C, P	[861]
2,1-L(ON)**Co**[(Me_3N)$CB_{10}H_{10}$] L=CO, PPh_3, PEt_3, $CNCMe_3$	S, X($CNCMe_3$), H, B, C, IR	[862]
2,1-(OC)(ON)**Co**[(Me_3N)$CB_{10}H_{10}$]-2,7-Co(CO(NO)	S, X, H, B, C, IR	[862]
2,1-(Ph_3PCu)(ON)L**Co**($HCB_{10}H_{10}$) (**Co**-Cu) L=CO, PPh_3	S, X(PPh_3), H, B, C, IR	[863]
2,1-(Ph_3PAg)(Et_3P)(ON)**Co**($HCB_{10}H_9$) (Ag–H–B)	S, H, B, C, IR	[863]

Continued

Compound	Information	References
Related derivatives		[863]
Closo-Co_2CB_9 clusters		
2,3,1-$(CO)_5$**Co**$_2(CB_9H_{10})^-$	S, X, H, B, C, P, IR	[437]
2,3,1-$(CO)_5$**Co**$_2(CB_9H_9$-12-L) L = $O(CH_2)_4$, $O(CH_2)_4PPh_3$	S, X[$O(CH_2)_4$], H, B, C, P, IR	[437]
Closo-$CoPCB_9$ clusters		
3,1,2-/2,1,7-**Co**(**P**$CB_9H_{10})_2^-$	S, H, IR, UV	[684]
2,1,7-(Me**P**CB_9H_{10})**Co**(**P**CB_9H_{10})	S, H, IR, MS	[684]
3,1,2-(η-C_9H_{13})**Co**(**P**CB_9H_{10})	S, X, H, B, P, IR, MS	[1493]
Closo-CoC_2B_9 clusters		
Mono(dicarbollyl) Co complexes		
$CpCo(C_2B_9)$ and $Cp^*Co(C_2B_9)$ complexes		
3,1,2-Cp**Co**($C_2B_9H_{11-n}$ D_n)	S(D exchange), H, IR	[874]
2,1,12-Cp**Co**($C_2B_9H_{11}$)	S, B, IR	[875]
2,1,7 (4,1,7)-Cp**Co**($C_2B_9H_{11}$)	S	[812]
3,1,2-Cp**Co**($RC_2B_9H_{10}$) R = H, Me, Ph, $HOCH_2$, $ClCH_2$, HO(O)C	MS (detailed)	[878]
8,9′-[3,1,2-Cp**Co**($C_2B_9H_{10}$)]$_2$	S, X, H, B	[879]
3,1,2-Cp**Co**($MeC_2B_9H_{10}$)	H	[880]
3,1,2-Cp**Co**[$(CH_2)_3C_2B_9H_9$]	S, H, B, IR, UV, E	[869]
3,1,2-Cp**Co**($PhC_2B_9H_{10}$)	C	[870]
3,1,2-Cp**Co**($C_2B_9H_{10}$-9-Ph)	S	[881]
3,1,2-Cp**Co**{[C(O)OH]$_2C_2B_9H_9$}	S, H, IR	[882]
3,1,2-Cp**Co**($RMeC_2B_9H_9$) R = C(O)OMe, CF═$CFCF_3$	S, H, IR	[316]
3,1,2-Cp**Co**{[CH(OH)R]$C_2B_9H_{10}$} R = Me, Et, CMe_3	S	[883]
3,1,2-Cp**Co**[$(CH_2R)C_2B_9H_{10}$] R = Me, Et, CMe_3	S	[883]
3,1,2/2,1,7-Cp**Co**[$(HOCH_2)_2C_2B_9H_9$]	S	[884]
3,1,2-Cp**Co**[(*m*/*p*-FC_6H_4]$C_2B_9H_{10}$}	F	[761]
3,1,2-Cp**Co**{[C(O)NMe_2]$C_2B_9H_{10}$}	S, H(rotational barrier)	[885]
3,1,2-Cp**Co**[$(CH_2NMe_2)C_2B_9H_{10}$]	S, H	[885]
3,1,2-Cp**Co**[(*p*-$NO_2C_6H_4$)$C_2B_9H_9$]-R R = H, ONO_2	S	[886]
3,1,2-Cp**Co**[(*p*-$NH_2C_6H_4$)$C_2B_9H_9$]-R R = H, NH_2	S	[886]
3,1,2-Cp**Co**($C_2B_9H_{10}$)-6-CH═CH_2	S	[887]
3,1,2-Cp**Co**($C_2B_9H_{10}$-R) R = OH, ONO_2	S	[886]
3,1,2-Cp**Co**($C_2B_9H_{10}$-8-R) R = OH, $OC(O)CF_3$	S	[724]
3,1,2-Cp**Co**($C_2B_9H_{10}$-6-NH_2)	S	[887]
(+/−)3,1,2-Cp**Co**($C_2B_9H_{10}$-4-SMe)	S, H, B, MS, CD	[810]
3,1,2-Cp**Co**($C_2B_9H_9$-8,9-Br_2) supramolecular C—H···X—B bonds	S, X, H, B, C	[891]
3,1,2-Cp**Co**($MeC_2B_9H_{9-n}Br_n$) *n* = 1,2	S, H	[880]
3,1,2-Cp**Co**($C_2B_9H_8$)-8,9,12-Br_3	E	

Compound	Information	References
3,1,2-Cp**Co**($C_2B_9H_{10}$-9-I)	S	[881]
3,1,2-Cp**Co**($C_2B_9H_{10}$)-9-HgCl	S, H, B	[892]
3,1,2-Cp**Co**($R_2C_2B_9H_7$)-9-Y-12-HgX R = H, CH_2OH; X = Cl, Br, $OC(O)CF_3$; Y = H, HgCl, HgBr	E	[873]
3,1,2-Cp**Co**($R_2C_2B_9H_7$)-9,12-X_2 X = HgCl, HgOAc; R = H, CH_2OH	S, H, B	[892]
3,1,2-Cp**Co**($C_2B_9H_{10}$)-*n*-HgOC(O)Me *n* = 8,9	S, H, B	[892]
	S, X	[893]
3,1,2-Cp**Co**($C_2B_9H_{10}$)-9,12-$[HgOC(O)Me]_2$ *n* = 8,9	S	[893]
3,1,2-Cp**Co**($C_2B_9H_{10}$)-*n*-$HgOC(O)CF_3$ *n* = 8,9	S, H, B	[892]
3,1,2-Cp**Co**($C_2B_9H_{10}$)-9-Hg(10-*nido*-7,8-$C_2B_9H_{11}$)$^-$	S, H, B	[894]
3,1,2-(PhC_5H_4)**Co**($C_2B_9H_{11}$)	S, H, IR	[896]
3,1,2-(RC_5H_4)**Co**($C_2B_9H_{11}$) R = *n*-C_4H_9, C≡CPh	S, H, IR	[882]
3,1,2-[*cyclo*-1,2-*o*-NC_5H_4–C(OH)][*o*-C_5H_4N–C(O)O]**Co**($C_2B_9H_{10}$) 2**Co**–N, **Co**–O	S, X	[1472]
3,1,2-Cp**Co**[1-(1′-1′,2′-$C_2B_9H_{11}$)$C_2B_9H_{10}$]	S, X, H, B, MS	[1570]
2,1,8-Cp**Co**[8-(1′-1′,2′-$C_2B_9H_{11}$)$C_2B_9H_{10}$]	S, X, H, B, MS	[1570]
3,1,2-[$Ph_2P(CH_2)_nPPh_2$]Cl**Co**($C_2B_9H_{11}$) *n* = 2,3	S, X(*n* = 2), H, B, P	[1534]
8,1,2-CpCo[(F_3C-C_6F_4)$PhC_2B_9H_9$]	S, X, H, B, MS	[1549]
8,1,2-CpCo[(1′,2′-$C_2B_9H_{11}$)$C_2B_9H_{10}$]	S, X, H, B, MS	[1549]
8,1,2-CpCo($C_2B_9H_{11}$)	S, X, H, B, MS	[1549]
(η⁶-benzene)Co(C_2B_9) complexes		
3,1,2-(*p*-$NO_2C_6H_4$-C_5H_4)**Co**($C_2B_9H_{10}$R) R = H, ONO_2	S	[886]
3,1,2-(*m*/*p*-FC_6H_4-C_5H_4)**Co**($C_2B_9H_{11}$)	S, H, F	[896]
Other (hydrocarbon)Co(C_2B_9) complexes		
(η^4-C_4Me_4)**Co**($C_2B_9H_{10}$-4-SMe_2)	S, H, B	[739]
3,1,2-(η^1,η^3-C_8H_{12})**Co**($C_2B_9H_{10}$-5-SMe_2)	S, X, H, B	[1426]
3,1,2-(η^5-C_9H_7)**Co**(RR′$C_2B_9H_9$) RR′ = Ph, H; CH_2OMe, H; CH_2OMe, CH_2OMe C_9H_7 = indenyl	S, X, H, B, IR	[899]
(η⁶-pyrollyl)Co(C_2B_9) complexes		
3,1,11-(NC_4H_4)**Co**($Ph_2C_2B_9H_9$)	S, X, H, B	[902]
3,1,2-(NC_4H_4)**Co**($PhC_2B_9H_{10}$)	S, X, H, B, C, IR	[903]
3,1,2-(NC_4H_4)**Co**[$(CH_2)_3C_2B_9H_9$]	S, X, H(variable temp), B, C	[904]
3,1,2-(NC_4H_4)**Co**[Me(MeS)$C_2B_9H_9$]	S, X, H, B, C, IR, E	[901]
3,1,2-(NC_4H_4)**Co**[$(MeS)_2C_2B_9H_9$]	S, X, H, B, C, IR	[903]
3,1,2-($NC_4Me_2H_2$)**Co**(RR′$C_2B_9H_9$) R,R′ = Ph; R = Me, R′ = SMe	S, H, B, C, IR, E(influence of substituents)	[901]
3,1,2-($NC_4Me_2H_2$)**Co**($MeC_2B_9H_{10}$)	S, X, H, B, C	[906]
3,1,2-(NC_4H_4)**Co**{R[$(CH_2)_3NC_4H_4$]$C_2B_9H_9$} R = Me, Ph	S, X(Me), H, B, C, IR	[909]
3,1,2-(NC_4H_4)**Co**[(C_3H_5)$PhC_2B_9H_9$]	S, H, B, C, IR	[905]
Ag[3,1,2-(NC_4H_4)**Co**($RC_2B_9H_{10}$)]$_2^+$ R = H, Ph	S, H(actual), B(actual), C, IR, MS, E	[910]

Continued

Compound	Information	References
3,1,2-[(Me-aquocobaloxime)NC_4H_4)**Co**($RC_2B_9H_{10}$) R = H, Ph	S, H(actual), B(actual), C, IR, MS, E	[910]
Other (ligand)Co(C_2B_9) complexes		
3,1,2-$(CO)_2$**Co**($C_2B_9H_{10}$-10-CO)	S, H, B, C, IR	[911]
3,1,2-$(PMe_2Ph)_2Cl$**Co**($C_2B_9H_{11}$)	S, X, H, B, C, IR	[911]
3,1,2-($PhCN_4SCoCpS_2$)**Co**($C_2B_9H_8$)-3,4-($PhCN_4S$)	S, X, H, B, C, IR	[913]
Bis(dicarbollyl) Co complexes		
3-**Co**(1,2-$C_2B_9H_{11})_2^-$	COND, aggregation in H_2O; dynamic and static light-scattering; atomic force microscopy; scanning electron microscopy	[932]
	Compartmentalized hybrid star-shaped metallacarborane-polyethylene oxide—poly (2-alkyl oxazoline nanoparticles	[1547]
	Surface activity and molecular reorganization at water surface via B-H···H–C bonds NLO	[1559]
	Preferential chlorination rates, MS	[1504]
3-**Co**(1,2-$C_2B_9H_{11})_2^-$·HIV-1 protease complex HIV-1 protease inhibitor	X	[933]
$(TMTSF)_2^+$ 3-**Co**(1,2-$C_2B_9H_{11})_2^-$ TMTSF = tetramethyltetraselenafulvalenium	S, X, COND	[935]
	Raman	[1417]
[3-**Co**(1,2-$C_2B_9H_{11})_2^-]_8Zn^{2+}$(phthalocynaine) intercellular accumulation in GL6 glioblastoma cells		[1553]
$(ETTF)^+$ 3-**Co**(1,2-$C_2B_9H_{11})_2^-$ ETTF = bis (ethyenedithiotetrathiafulvalenium	S, X, COND	[935]
$(BEDT\text{-}TTF)_2^+$ 3-**Co**(1,2-$C_2B_9H_{11})_2^-$ R = H, Br BEDT-TTF = bis (ethylenedilithio)tetrathiofulvalene	S, X, COND	[936]
$(BEDT\text{-}TTF)_2^+$ 3-**Co**(1,2-$C_2B_9H_{11}$)(1,2-$C_2B_9H_{10}$-8-I)$^-$ BEDT-TTF = bis (ethylenedilithio)tetrathiofulvalene	S, X, COND	[936]
$(BEDT\text{-}TTF)_2^+$ 3-Co(1,2-$C_2B_9H_{10}$-8-Cl)$_2^-$ BEDT-TTF = bis (ethylenedilithio)tetrathiofulvalene	S, X, COND	[1568]
$(BEDT\text{-}TTF)_n^+$ 3-**Co**(1,2-$C_2B_9H_{10}$-8-Br)$_2^-$ n = 1,2 BEDT-TTF = bis (ethylenedilithio)tetrathiofulvalene) molecular semiconductors	S, X, COND	[937]
$(BMDT\text{-}TTF)_4^+$ 3-**Co**(1,2-$C_2B_9H_{10}$-8-Br)$_2^-$ BMDT-TTF = bis (methylenedilithio)tetrathiofulvalene molecular semiconductors	S, X, COND	[937]
$(BMDT\text{-}TTF)_2^+$ 3-Co(1,2-$C_2B_9H_{10}$-8-Cl)$_2^-$ BMDT-TTF = bis (methylenedilithio)tetrathiofulvalene	S, X, COND	[1568]
$(BMDT\text{-}TTF)_4^+$ 3-**Co**(1,2-$C_2B_9H_{10}$-8-I)$_2^-$ BMDT-TTF = bis (methylenedilithio)tetrathiofulvalene molecular semiconductor	S, X, COND	[938]
$(BEDT\text{-}TTF)_n^+$ 3-**Co**(1,2-$C_2B_9H_{10}$-8-I)$_2^-$ n = 1,2 BEDT-TTF = bis (ethylenedilithio)tetrathiofulvalene) molecular semiconductor	S, X, COND	[938]
$BEDT\text{-}TTF^+$ 3-**Co**(1,2-$C_2B_9H_{10}$-9-I)$_2^-$	S, X, COND	[1428]
TTF^+ 3-**Co**(1,2-$C_2B_9H_9$-9,12-$I_2)_2^-$ radical cation salt	S, X, COND	[1428]
$TMTTF^+$ 3-**Co**(1,2-$C_2B_9H_{11}$)(1,2-$C_2B_9H_{10}$-8-OH)$^-$	S, X, COND	[1427]
$BEDT\text{-}TTF^+$ 3-**Co**(1,2-$C_2B_9H_{11}$)(1,2-$C_2B_9H_{10}$-8-OH)$^-$	S, X, COND	[1427]
3-**Co**(1,2-$C_2B_9H_6D_5)_2^-$	S, B	[923]
	S, IR	[939]

Compound	Information	References
3 **Co**(1,2-$C_2B_9H_{11}$)(1,2-$C_2B_9H_{10}$-8-[$(O\text{-}CH_2)_2]_2^-NH_2^+$ $(CH_2)_3SiO_3^-$ silica zwitterionic HPLC stationary phase	S	[1566]
3-**Co**(1,2-$C_2B_9H_{11}$)(1,2-$C_2B_9H_{10}$)-8-$[O(CH_2)_2]_2$-O-(phthalocyanine-OR)Zn R = Me, $[(CH_2)_2O]_2(C_2B_9H_{10})Co(C_2B_9H_{11})$	S, H, MS, UV	[940]
3-**Co**(1,2-$C_2B_9H_{11}$)($C_2B_9H_{10}$-8-$O(CH_2)_2$–$O(CH_2)_2$-O-NC_5H_4-*m*-OR^- K^+ R = Zn phthalocyanine	S, H, C, MS, UV, fluorescence	[941]
3-**Co**(1,2-$C_2B_9H_{11}$)(1,2-$C_2B_9H_{10}$-8-$O(CH_2)_2$–$O(CH_2)_2$-1-R^- R = 1,2-$C_2B_{10}H_{11}$, 1,7-$C_2B_{10}H_{11}$, 1,12-$C_2B_{10}H_{11}$	S, H, B, C, MS	[942,943]
(1,2-$C_2B_9H_{11}$)**Co**(1,2-$C_2B_9H_{10}$)-8-$O(CH_2)_2$–$O(CH_2)_2$-*nido*-7,8-$RC_2B_9H_{10}^{2-}$ R = H, Me, Ph	S, H, B, C, MS	[942]
nido-7,8-[(1,2-$C_2B_9H_{11}$)**Co**(1,2-$C_2B_9H_{10}$)-8-$O(CH_2)_2$–$O\text{-}(CH_2)_2]_2C_2B_9H_{10}^{3-}$	S, H, B, C, MS	[942]
(1,2-$C_2B_9H_{11}$)**Co**(1,2-$C_2B_9H_{10}$)-8-$O(CH_2)_2$–$O(CH_2)_2$-*nido*-7,9-$C_2B_9H_{11}^{2-}$	S, H, B, C, MS	[942]
(1,2-$C_2B_9H_{10}$-8′-I)**Co**(1,2-$C_2B_9H_{10}$)-8-$(OCH_2CH_2)_2X^-$ X = Br, I	S, H, B, IR, MS	[944]
(1,2-$C_2B_9H_{11}$)**Co**(1,2-$C_2B_9H_{10}$)-8-OCH_2CH_2OH	S, H, B, IR, MS	[944]
$3K^+$ 2,4,6-N_3C_3[*p*-C_6H_4-$O(CH_2)_2$-O-$(CH_2)_2$-O-(8-$C_2B_9H_{10}$)**Co**-$(C_2B_9H_{11})]_3^{3-}$ metallodendrimer	S, H, B, C, IR, MS, TGA	[1410]
$6K^+$ 1,3,5-C_6H_3[3,5-C_6H_3[$O(CH_2)_2$-O-$(CH_2)_2$-O-(8-$C_2B_9H_{10}$)**Co**-$(C_2B_9H_{11})]_2]_3^{6-}$ metallodendrimer	S, H, B, C, IR, MS, TGA	[1410]
$8K^+$ C_6H_4{*p*-$CH_2OC_6H_3$-2′,4′-[CH_2O[C_6H_3-2′,4′-[$CH_2OCH_2CH_2OCH_2CH_2O$-8′-($C_2B_9H_{10}$)**Co**($C_2B_9H_{11}$)]$_2$]$_2$}$_2^{8-}$ metallodendrimer	S, H, B, C, IR, UV	[1420]
Si{$(CH_2)_2SiMe_2(CH_2)_2$-μ(SiMe)-1,1′-[3-Co(1,2-$C_2B_9H_{11})_2]_2\}_4^{8-}$ metallodendrimers	S, H, B, C, Si, IR, MS	[945]
Si{$(CH_2)_2$SiMe[$(CH_2)_2SiMe_2(CH_2)_2$-μ(SiMe)-1,1′-[3-Co(1,2-$C_2B_9H_{11})_2]_2\}_4^{8-}$ metallodendrimers	S, H, B, C, Si, IR, MS	[945]
Cyclo-O_4Si{$(CH_2)_2$SiMe[$(CH_2)_2$-μ(SiMe)-1,1′-[3-Co(1,2-$C_2B_9H_{11})_2]_2\}_4^{8-}$ metallodendrimers	S, H, B, C, Si, IR, MS	[945]
Polyanionic aryl ether photoluminescent dendrimers with μ(8,8′)-SiMeH-3-Co(1,2-$C_2B_9H_{10})_2$ units	S, H, UV, MS, fluorescence	[946]
3-**Co**(1,2-$C_2B_9H_{11}$)(1,2-$C_2B_9H_{10}$-8-R)$^-$ R = NH═C(O)Me, NH═C(O)Ph	S, H, B, C, MS	[948]
3-**Co**(1,2-$C_2B_9H_{11}$)[1,2-$C_2B_9H_{10}$-8-N═ClNH(CH_2R′)(CH_2R″)] R = Me, Ph; R′ = H, Et; R″ = Et, *n*-C_4H_9	S, X(Me, H, *n*-C_4H_9), H, B, C, MS	[948]
3-**Co**(1,2-$C_2B_9H_{11}$)(1,2-$C_2B_9H_{10}$-8-R) R = NH_3, NH_2Et, NH_2CH_2Ph, $NH(CH_2Ph)_2$	S, X[$NH(CH_2Ph)_2$], H, B, C, MS	[948]
3-**Co**(1,2-$C_2B_9H_{11}$)[1,2-$C_2B_9H_{10}$-8-$NH_2(CH_2)_3SO_3]^-$	S, H, B, C, MS	[948]
3-**Co**(1,2-$C_2B_9H_8Cl_3)_2^-$	Gamma irradiation effects on Cs^+ and Sr^{2+} extraction in polyethylene glycol	[949]
M^+ 3-**Co**(1,2-$C_2B_9H_{11})_2^-$ $M^+ = Ag^+$, Ph_3C^+	S, H, B, IR	[952]
$Ag(MeCN)_2^+$ 3-**Co**(1,2-$C_2B_9H_{11})_2^-$ B—H···Ag	X	[953]
$Ag[NC(CH_2)_nCN]^+$ 3-**Co**(1,2-$C_2B_9H_{11})_2^-$ *n* = 3,4	S, X, IR	[954]
$Ag(\eta^2$-*p*-$MeC_6H_4Me)^+$ 3-**Co**(1,2-$C_2B_9H_{11})_2^-$	X	[955]
$Ag(\eta^2$-*p*-$MeC_6H_4Me)^+$ 3-**Co**(1,2-$C_2B_9H_{11})_2^-$-8,8′-μ-C_6H_4	X	[955]

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Compound	Information	References
$Ni(TMTAA)^+$ 3-**Co**$(1,2\text{-}C_2B_9H_{11})_2^-$ grafted crown ether N_4-macrocycle polymer	S, X, H, MS	[957]
M[2.2.2]cryptate$^+$ 3-**Co**$(1,2\text{-}C_2B_9H_{11})_2^-$ supramolecular assembly	S, X, H	[958]
$Sr(H_2O)_8(MeCN)(CTV)_4(H_2O)_4^+$ 3-**Co**$(1,2\text{-}C_2B_9H_{11})_2^-$ (CTV = cyclotriveratrylene) host-guest H-bonded adamantoid network	S, X	[961]
3-^{60}**Co**$(1,2\text{-}C_2B_9H_{11})_2^-$ ionic associates of incapacitating agents; solvent extraction	S	[963]
$[ZnCl(Hpz\text{-}5\text{-}CMe_3)_3]^+$ 3-**Co**$(1,2\text{-}C_2B_9H_{11})_2^-$ Hpz = pyrazole cobaltacarborane in bowl-shaped host cavity	S, X, H, MS	[964]
$[2,6L_2C_6H_3]SnPh_2^+$ 3-**Co**$(1,2\text{-}C_2B_9H_{11})_2^-$ L = MeO, Me_3CO stabilization by pincer-type triaryltin ligand	S, X, H, B, Sn, IR, MS	[965]
3-**Co**$(1,2\text{-}C_2B_9H_{11})(1,2\text{-}LiC_2B_9H_{10})^-$	S, B	[914]
3-**Co**$(1,2\text{-}LiC_2B_9H_{10})_2^-$	S, B	[914]
3-**Co**$(1,2\text{-}MeC_2B_9H_{10})_2^-$	S, H, B, C	[914]
3-**Co**$(1,2\text{-}C_2B_9H_{11})(1,2\text{-}Me_2C_2B_9H_9)^-$	S, H	[914]
3-**Co**$(1,2\text{-}C_2B_9H_{11})[1,2\text{-}(n\text{-}C_6H_{13})C_2B_9H_{10}]^-$	S, H, B, C	[914]
3-**Co**$[1,2\text{-}(n\text{-}C_6H_{13})C_2B_9H_{10}]_2^-$	S, H	[914]
3-**Co**$[1,2\text{-}(MeOCH_2CH_2OCH_2)C_2B_9H_{10}]_2^-$	S, X, H, B, C	[914]
3-**Co**$(1,2\text{-}PhC_2B_9H_{10})_2^-$ extraction agent for $^{137}Cs^+$, $^{90}Sr^{2+}$, $^{152}Eu^{3+}$	X	[966]
3-**Co**$[1,2\text{-}(CH{=}CH_2)_2C_2B_9H_9]_2^-$	S, H, IR	[686]
3-**Co**$[\mu\text{-}1,2\text{-}(CH{=}CH{-}CH_2)_2C_2B_9H_9]_2^-$	S, H, IR	[686]
3-**Co**$(1,2\text{-}C_2B_9H_{11})[1,2\text{-}(C_4H_6)C_2B_9H_9]^-$	S, IR, E	[687]
3-**Co**$[1,2\text{-}(C_4H_6)C_2B_9H_9]_2^-$	S, H, IR	[687]
3-**Co**$(1,2\text{-}C_2B_9H_{11})(1,2\text{-}C_2B_9H_{10}\text{-}8\text{-}R)^-$ R = Ph, dioxane	S, X, H, B	[969]
3-**Co**$(1,2\text{-}C_2B_9H_{10}\text{-}6\text{-}Ph)_2^-$	S, H, B, IR	[923,970]
3-**Co**$(1,2\text{-}C_2B_9H_{10}\text{-}9\text{-}R)_2^-$ R = Me, Et, n-C_6H_{13}, Ph	S, B	[971]
3-**Co**$(1,2\text{-}RC_2B_9H_{10})_2^-$ R = Ph, Me, EtS	S, H, B, C, IR, E	[926]
3-**Co**$(1,2\text{-}MeRC_2B_9H_9)_2^-$ R = $(CH_2)_3O(CH_2)_2OMe$, $(CH_2)_3OCH_2CHMe_2$, $(CH_2)_6O(CH_2)_3Me$, $(CH_2)_3Me$	S, B[$(CH_2)_3O(CH_2)_2OMe$]	[972]
3-**Co**$[1,2\text{-}(EtS)PhC_2B_9H_9]_2^-$	S, H, B, C, IR, E	[926]
3-**Co**$\{1,2\text{-}[(CH_2)_2OMe]MeC_2B_9H_9\}_2^-$	S, H, B, C, IR, E	[926]
3-**Co**$[1,2\text{-}(EtS)MeC_2B_9H_9]_2^-$	S, H, B, C, IR, UV, E	[926]
3-**Co**$[1,2\text{-}(PhC_6H_4)C_2B_{10}H_{11}]_2^-$	S, X, H, B, C, IR, S	[1586]
3-**Co**$[1,2\text{-}(SC_4H_3)_nC_2B_9H_{11}]_2^-$ n = 1–3	S, H, B, C, MS, UV, E	[974]
3-**Co**$(1,2\text{-}C_2B_9H_{11})[1,2\text{-}(HOOC)C_2B_9H_{10}]^-$	S, IR	[975]
3-**Co**$(1,2\text{-}C_2B_9H_{11})[1,2\text{-}(ClOC)C_2B_9H_{10}]^-$	S, IR	[975]
3-**Co**$[1,2\text{-}(ClOC)C_2B_9H_{10}]_2^-$	S, IR	[975]
3-**Co**$[C_2B_9H_{10}\text{-}C_5H_5NC(O)OMe]_2Cl$	S, B, H, IR, MS	[762]

Compound	Information	References
M^+ 3-**Co**[1,2-$(Ph_2P)C_2B_9H_{10}]_2^-$ analogues of BINAP M = Ph_3PAg, Ph_3PAu, $Me_2C(O)Ag$, Rh	S, X[Ph_3PAg, Ph_3PAu, $Me_2C(O)Ag$], H, B, C, P, IR, MS	[976]
$(Ph_3P)ClPd\{3\text{-}$**Co**$[1,2\text{-}(Ph_2P)C_2B_9H_{10}]_2\}_2$ analogue of BINAP	S, H, B, C, P, IR, MS	[976]
3-**Co**$(1,2\text{-}C_2B_9H_{10})_2\text{-}\mu(1,1')\text{-}SiMe_2^-$	S, X, H, B(2d), C, Si, IR, UV, MS	[978]
3-**Co**$(1,2\text{-}C_2B_9H_{11})[1,2\text{-}(Me_3Si)C_2B_9H_{10}]^-$	S, X, H, B(2d), C, Si, IR, UV, MS	[978]
3-**Co**$(1,2\text{-}C_2B_9H_{10})_2\text{-}\mu(1,1')\text{-}SiMeH^-$	S, H, B([2]d), C, Si, IR, UV, MS	[978]
3-**Co**$(1,2\text{-}C_2B_9H_9)_2\text{-}\mu(1,1')\text{-}SiMeR\text{-}\mu(8,8')\text{-}C_6H_4^-$	S, H, B(2d), C, Si, IR, UV, MS	[978]
3-**Co**$(1,2\text{-}C_2B_9H_{10})[1,2\text{-}(Me_3Si)C_2B_9H_9]\text{-}\mu(8,8')\text{-}C_6H_4^-$	S, H, B(2d), C, Si, IR, UV, MS	[978]
3-**Co**$[1,2\text{-}(Me_3Si)C_2B_9H_{10}]_2^-$	S, X, H, B(2d), C, Si, IR, UV, MS	[978]
3-**Co**$[(1,2\text{-}C_2B_9H_{11})(1,2\text{-}C_2B_9H_{10}\text{-}5\text{-}O(CH_2)_2O(CH_2)_2]_2NHR^-$ R = H, n-C_4H_9 HIV protease inhibitor	S, X	[979]
3-**Co**$(1,2\text{-}C_2B_9H_{10}\text{-}8\text{-}OH)(1,2\text{-}C_2B_9H_{10}\text{-}8\text{-}R)^-$ R = Me, Et	S, H, B, C, MS	[980]
3-**Co**$(1,2\text{-}C_2B_9H_{11})(1,2\text{-}C_2B_9H_{10})\text{-}8\text{-}O(CH_2)_2NH[C(O)OEt]_2\text{-}C(O)Me^-$	S, X, H, B, C, IR	[982]
3-**Co**$(1,2\text{-}C_2B_9H_{10}\text{-}8\text{-}L)(1,2\text{-}C_2B_9H_{10}\text{-}8\text{-}I)$ L = pyr, morpholine, PPh_3, $OPPh_3$	S, H, B, C, P, IR	[1409]
3-**Co**$(1,2\text{-}C_2B_9H_{10}\text{-}8\text{-}L)(1,2\text{-}C_2B_9H_{10}\text{-}8\text{-}I)^-$ L = Ph, $C_6H_2Me_3$	S, H, B, S	[1409]
3-**Co**$(1,2\text{-}C_2B_9H_{10})_2\text{-}8,8'\text{-}I^-$ reactions with hindered Lewis bases → C–H activation in arenes		[1409]
3-**Co**$(1,2\text{-}C_2B_9H_{11})(1,2\text{-}C_2B_9H_{10}\text{–}ONOPh)^-$	S, H, B, C	[966]
3-**Co**$(1,2\text{-}C_2B_9H_{11})(1,2\text{-}C_2B_9H_{10})\text{-}8\text{-}X)^-$ X = $OP(O)(OH)_2$, OP(O)(OH)Ph	S, H, B(2d), P	[984]
3-**Co**$[(1,2\text{-}C_2B_9H_{11})(1,2\text{-}C_2B_9H_{10})\text{-}8\text{-}CH_2Ph)(CH_2CH_2\text{–}O)_2^-]_3\ Ln^{3+}$	X	[985]
3-**Co**$(1,2\text{-}C_2B_9H_{11})(1,2\text{-}C_2B_9H_{10})\text{-}8\text{-}R$ R = $O(CH_2)_4O$, OC_5H_{10}, $O(CH_2)_2O(CH_2)_2$X X = NC_4H_4, NC_8H_6, $NC_{12}H_8$	S, H, B, C, IR, MS	[986]
3-**Co**$(1,2\text{-}C_2B_9H_{11})(1,2\text{-}C_2B_9H_{10}\text{-}8\text{-}L)(CH_2CH_2O)_2^-$ L = $OPPH_2$, $OCCH_2$, NR, C_4H_9, $C_{12}H_{25}$, CH_2Ph selective extraction agents for lanthanide and actinide cations from highly acidic nuclear waste	S, H, B	[985]
3-**Co**$(1,2\text{-}C_2B_9H_{11})(1,2\text{-}C_2B_9H_{10})\text{-}8\text{-}O_2(C_2H_4)_2$	S, H, B, C, MS	[987]
$[O(CH_2)_2]_5\text{-}O\text{-}8,8'\text{-}[(C_2B_9H_{10})$**Co**$(C_2B_9H_{11})^{2-}$	ED_{50} effects on living cells	[1555]
3-**Co**$(C_2B_9H_{10}\text{-}8\text{-}I)_2^-$	ED_{50} effects on living cells	[1555]
3-**Co**$(1,2\text{-}C_2B_9H_{11})(1',2'\text{-}C_2B_9H_{10}\text{-}8'\text{-}Me)^-$	ED_{50} effects on living cells	[1555]
3-**Co**$(1,2\text{-}C_2B_9H_{11})(1,2\text{-}C_2B_9H_{10}\text{-}8\text{-}O(CH_2)_2\text{–}O(CH_2)_2\text{-}1\text{-}(1,2\text{-}C_2B_{10}H_{11})^-$ (FF)	S, H, B, MS	[943]
1,2-$[(CH_2)_2\text{-}O\text{-}(CH_2)_2\text{-}O\text{-}8\text{-}(1,2\text{-}C_2B_9H_{10})$**Co**$(1,2\text{-}C_2B_9H_{11})]_2C_2B_{10}H_{10}^{2-}$ (FF)	S, H, B, C, MS	[942]
1′,n-$[(1,2\text{-}C_2B_9H_{11})$**Co**$(1,2\text{-}C_2B_9H_{10})\text{-}8\text{-}O_3(C_2H_4)_2]_2C_6H_4^{2-}$ n = 2′,3′,4′	S, H, B, C, MS	[987]
1′,3′,5′-$\{(1,2\text{-}C_2B_9H_{11})$**Co**$(1,2\text{-}C_2B_9H_{10})\text{-}8\text{-}O_3(C_2H_4)_2\text{-}[C(O)]_n\}_3C_6H_4^{3-}$ n = 0,1	S, H, B, C, MS	[987]
1′,2′-$[(1,2\text{-}C_2B_9H_{11})$**Co**$(1,2\text{-}C_2B_9H_{10})\text{-}8\text{-}O_2(C_2H_4)_2S]_2C_2B_{10}H_{10}^{2-}$	S, H, B, C, MS	[987]
3-**Co**$(1,2\text{-}C_2B_9H_{10})_2\text{-}\mu(8,8')\text{-}NC(O)(CH_2)_nP(O)PhR$ n = 1, 2; R = Ph, n-C_8H_{17} extraction agents for lanthanides and actinides from nuclear waste	S, X(Ph, n = 1), H, B, C, P, MS	[988]

Continued

Compound	Information	References
3-**Co**(1,2-$C_2B_9H_{10}$-8-OMe)($C_2B_9H_{10}$-8-R) R = NR′C(O)CH_2P(O)PhR″ R′ = CH_2Ph, R″ = Ph, *n*-C_8H_{17} extraction agents for lanthanides and actinides from nuclear waste	S, X(Ph, CH_2Ph), H, B, C, P, MS	[988]
3-**Co**(1,2-$C_2B_9H_{11}$)[$C_2B_9H_{10}$-8-NR(O)CH_2P(O)Ph_2] R = H, Et, CH_2Ph extraction agents for lanthanides and actinides from nuclear waste	S, H, B, C, P, MS	[988]
(Porphyrin)R_4X_8-N,N′ $CH_2)_2$–O–$(CH_2)_2$–O–(1,2-$C_2B_9H_{10}$)**Co**(1,2-$C_2B_9H_{11}$)]$_2$ R = H, Ph; X = H, Et	S, H, MS, UV, E	[989]
(Porphyrin)Ph_4–C_6H_4–NH–$(CH_2)_2$–O–$(CH_2)_2$–O–(1,2-$C_2B_9H_{10}$)**Co**-(1,2-$C_2B_9H_{11}$)$^-$	S, H, C, MS, UV, E	[989]
(Porphyrin)Ph_4–C_6H_4–N[$(CH_2)_2$–O–$(CH_2)_2$–O–(1,2-$C_2B_9H_{10}$)**Co**-(1,2-$C_2B_9H_{11}$)]$_2^{2-}$	S, H, C, MS, UV, E	[989]
(Porphyrin){C_5H_3N[CH_2–O)$_2$-1,2-$C_2B_9H_{10}$]**Co**[1,2-$C_2B_9H_{11}$]}$_4^{4-}$	S, H, C, UV, fluorescence spectroscopy	[990]
(Porphyrin)[(C_6H_4)–O–$(CH_2)_2$–O–$(CH_2)_2$–O–(1,2-$C_2B_9H_{11}$)**Co**(1,2-$C_2B_9H_{11}$)]$_4^{4-}$	S, H, C, UV, fluorescence spectroscopy, light scattering, atomic force microscopy, inhibition of HIV-1 protease	[991]
(Porphyrin)[(1,2-$C_2B_9H_{11}$)**Co**(1,2-$C_2B_9H_{10}$)-8-O$(CH_2)_2$–O–$(CH_2)_2$]$_n$ *n* = 1–4	S, X(*n* = 1), H, C, UV, MS	[992]
(Porphyrin){(C_6H_3)-3′,5′-[O$(CH_2)_2$O$(CH_2)_2$O(1,2-$C_2B_9H_{11}$)-**Co**(1,2-$C_2B_9H_{11}$)]}$_n$(C_6H_5)$_{4-n}$	S, X(*n* = 2), H, C, U, fluorescence	[993]
(1,2-$C_2B_9H_{10}$)$_3$-Co(1,2-$C_2B_9H_{10}$)-8-(chlorine$_6$)	S, H, B, UV, MS	[994]
Calix[4]arene[OCH_2OCH_2O(1,2-$C_2B_9H_{10}$)**Co**(1,2-$C_2B_9H_{11}$)]$_4^{4-}$	S, H, B, UV, calorimetry	[996]
Other calix[4]arene (1,2-$C_2B_9H_{11}$)**Co**(1,2-$C_2B_9H_{10}$) derivatives	S	[995]
Resorc[4]arene (1,2-$C_2B_9H_{11}$)**Co**(1,2-$C_2B_9H_{10}$) derivatives	S	[995]
(1,2-$C_2B_9H_{11}$)**Co**(1,2-$C_2B_9H_{10}$)-8-O$(CH_2)_2$O$(CH_2)_2$–$NC_4H_4^-$	X	[986]
(1,2-$C_2B_9H_{11}$)**Co**(1,2-$C_2B_9H_{10}$)-8-O$(CH_2)_2$OL L = OMe, OEt, O$(CH_2)_2$OMe, O$(CH_2)_2$OEt	S, X(OEt), H, B, C, IR	[997]
(1,2-$C_2B_9H_{11}$)**Co**(1,2-$C_2B_9H_{10}$-8-R) R = *p*-C_6H_4OMe, Et, 2′-C_4H_3S	S, H, B	[998]
3-**Co**(1,2-R$C_2B_9H_{10}$-4-SMe_2)$_2^+$ DD/LL, *meso*	X, E, UV (electrochemical)	[897]
3-**Co**(1,2-R$C_2B_9H_{10}$-4-SMe_2)$_2$	UV (electrochemical), ESR (electrochemical)	[897]
(1,2-$C_2B_9H_{11}$)**Co**(1,2-$C_2B_9H_{10}$-8-SMe_2)	XPS	[928]
	S, H, IR	[759]
3-**Co**(1,2-$C_2B_9H_{10}$-8-SH)$_2^-$	S, B	[923]
2-**Co**(1,7-$C_2B_9H_{10}$)$_2$-μ(6,6′)-S^-	UV (detailed; photometric detection)	[1000]
3-**Co**(1,2-$C_2B_9H_{10}$)$_2$-μ(8,8′)-S_2^-	UV (detailed; photometric detection)	[1000]
3-**Co**(1,2-$C_2B_9H_{10}$)$_2$-μ (4,8′;8,4′)-R_2^- R = C_6H_4, C_6H_3Et, C_6H_3Me	UV (detailed; photometric detection)	[1000]
3-**Co**(1,2-$C_2B_9H_{10}$)$_2$-μ(8,8′)-O_2P(O)R^- R = Cl, NEt_2, Ph	UV (detailed; photometric detection)	[1000]
3-**Co**[1,2-Ph(RS)$_2C_2B_9H_9$]$_2^-$ R = Me, Et, *n*-C_4H_9	S, H, B, C, IR	[1001]
[1,2-Ph(RS)$C_2B_9H_8$]**Co**[1′,9′-Ph$C_2B_9H_9$]-μ(1′,8)-RS R = Me, Et, *n*-C_4H_9	S, X(Et), H, B, C, IR	[1001]
{(C_5H_4)**Co**(μ-S)$_2C_2B_9H_9$)[CH═CHC(O)OMe](Me$_2$C═CS_2H)}$_2$	S, X, H, B, IR, MS	[1582]
3-**Co**(1,2-$C_2B_9H_9$-8,9-Cl_2)$_2^-$	S, H, B, UV, IR	[916]
3-**Co**(1,2-$C_2B_9H_9$-9,12-Cl_2)$_2^-$	S, H, B, UV, IR	[916]

Compound	Information	References
(1,2-$C_2B_9H_{10}$-8-Cl)**Co**(1,2-$C_2B_9H_9$-8,9-Cl_2)$^-$	S, H, B, UV, IR	[916]
3-**Co**(1,2-$C_2B_9H_8$-8,9,12-Cl_3)$_2^-$	S, H, B, UV, IR	[916]
	Molecular dynamics of liquid-liquid extraction in octanol-H_2O system	[1006]
3-**Co**(1,2-$C_2B_9H_8$-8,9,12-Cl_3)$_2^-$ (n-C_8H_{17})$_3NH^+$	IR(ν_{NH} as a measure of acid strength)	[1007]
3-**Co**(1,2-$C_2B_9H_{10}$)$_2^-$-μ(8,8′)-Br	S(electrochemical)	[1004]
3-**Co**(1,2-$C_2B_9H_{10}$-8-Br)$_2^-$	S	[1005,1008]
	H, B	[1005]
(1,2-$C_2B_9H_{11}$)**Co**(1,2-$C_2B_9H_{10}$-8-I)$_2^-$	X	[1014]
3-**Co**(1,2-$C_2B_9H_{10}$-9-I)$_2^-$	S	[971]
(1,2-$C_2B_9H_{11}$)**Co**(1,2-$C_2B_9H_{10}$-8-I)$^-$	S, H, B, UV, IR	[916]
(1,2-$C_2B_9H_{10}$-8-L)**Co**(1,2-$C_2B_9H_{10}$-8-I) L = Me_2S, C_5H_5N, Me_3N, H_3N	S, H, B, MS	[1016]
(1,2-$C_2B_9H_{11}$)-3-**Co**(1′,2′-$C_2B_9H_{10}$)-8-O$(CH_2)_2$–O$(CH_2)_2N_3^-$ nucleoside conjugate	S(dipolar addition [chemical ligation]), H, B, IR, MS, UV	[766]
(1,2-$C_2B_9H_{11}$)-3-**Co**(1′,2′-$C_2B_9H_{10}$)-8-O$(CH_2)_2$–O$(CH_2)_2$—O$(CH_2)_n$C≡CH	S(dipolar addition [chemical ligation]), H, B, IR, MS, UV	[766]
(1,2-$C_2B_9H_{11}$)-3-**Co**(1′,2′-$C_2B_9H_{10}$)-8-O$(CH_2)_2$– O$(CH_2)_2$S$(CH_2)_3$SH	S(dipolar addition [chemical ligation]), H, B, IR, MS, UV	[766]
3-**Co**(1,2-$C_2B_9H_{10}$-n-I)$_2^-$ n=4,9 air-stable redox couple	S, H, B, C, IR, MS, E	[1573]
3-**Co**(1,2-$C_2B_9H_8$-4,9,12-I_3)$_2^-$ air-stable redox couple	S, H, B, C, IR, MS, E	[1573]
3-**Co**(1,2-$C_2B_9H_9$-9,12-Me_2)$_2^-$ air-stable redox couple	S, H, B, C, IR, MS, E	[1573]
3-**Co**(1,2-$C_2B_9H_7$-8,9,10,12-Me_4)$_2^-$ air-stable redox couple	S, H, B, C, IR, MS, E	[1573]
3-**Co**(1,2-$C_2B_9H_9$)$_2$-μ(4,8′)-μ(8,4′)-(*o*-C_6H_4)$_2^-$	S, X, H, B(2d), UV	[1018]
3-**Co**(1,2-$C_2B_9H_{10}$)$_2$-μ(8,8′)-$MeC_6H_3^-$	S, H, B, IR	[939]
dl-3-**Co**(1,2-$C_2B_9H_{10}$)$_2$-μ(1,1′)-CH_2OCH_2	S, X, E	[1019]
3-**Co**(1,2-$C_2B_9H_{10}$)$_2$-μ(1,1′)-$(CH_2)_n^-$ n=3–5	X(n=3, 4), H, B, C, IR	[598]
3-**Co**(1,2-$C_2B_9H_{10}$)$_2$-μ(8,8′)-$CH_2C_9H_6$	S, X, H, B	[1021]
3-**Co**(1,2-$C_2B_9H_{10}$)$_2$-μ(8,8′)-NH_2	S, MS, UV	[1022]
	S, H, B, C, MS, UV, IR (diffuse reflectance)	[859]
3-**Co**(1,2-$C_2B_9H_{10}$)$_2$-μ(8,8′)-$NH_2(CH_2)_n$ polymers	S, H, B, C, IR (diffuse reflectance)	[859]
3-**Co**(1,2-$C_2B_9H_{10}$)$_2$-μ(8,8′)-NHMe	S, MS	[1022]
2-**Co**(1,7-$C_2B_9H_{10}$)$_2$-μ(8,8′)-$N_2C_3H_2$C(O)OH	S, X, H, B, IR, MS	[775]
2-**Co**(1,7-$C_2B_9H_{10}$)$_2$-μ(8,8′)-$N_2C_3H_2$C(O)OMe$^-$	S, X	[1023]
3-**Co**(1,2-$C_2B_9H_{10}$)$_2$-μ(8,8′)-$NHCH_2$C(O)OMe	X	[1024]
[1,2-($C_4H_8NCH_2$)$C_2B_9H_{10}$]**Co**[1,2-($C_4H_8NHCH_2$)$C_2B_9H_{10}$] inter- and intramolecular H-bonding	S, X, H, B, C, MS	[1025]
[1,2-($C_5H_{10}NCH_2$)$C_2B_9H_{10}$]**Co**[1,2-($C_5H_{10}NHCH_2$)$C_2B_9H_{10}$] inter- and intramolecular H-bonding	S, X, H, B, C, MS	[1025]
3-**Co**(1,2-$C_2B_9H_{10}$)$_2$-μ(8,8′)-NOR_2 R=H, CMe_2, CHPh, Me	S, H, B, MS	[1028]
($C_2B_9H_{10}$–OH)**Co**($C_2B_9H_{10}$–NR_2) R=H, CMe_2, CHPh, Me	S, H, B, MS	[1028]

Continued

Compound	Information	References
$(C_2B_9H_{11})$**Co**$(C_2B_9H_{10})$-8-PMe_2	S, H, B, P, MS	[1029]
(1,7-$C_2B_9H_{11}$)**Co**(1,7-$C_2B_9H_{10}$)-6-PMe_2	S, X, H, B, P, MS	[1029]
3-**Co**(1,2-$C_2B_9H_{10}$)$_2$-μ(8,8′)-O^-	X	[857,1031]
3-**Co**(1,2-$C_2B_9H_{10}$)$_2$-μ(8,8′)-OEt	S, UV	[1022]
3-**Co**(1,2-$C_2B_9H_{10}$)$_2$-μ(8,8′)-O_2CMe	S, H, B, IR	[776]
	X	[977]
3-**Co**(1,2-$C_2B_9H_{10}$)$_2$-μ(8,8′)-{*cyclo*-[*p*-C_6H_4-NMe]$_2$C═O} urea	S, X, H	[1033]
3-**Co**(1,2-$C_2B_9H_{10}$)$_2$-μ(8,8′)-O_2P(O)X X = Cl, OH extraction agents for Eu^{3+} in 1M HNO_3	S, X(Cl)	[984]
3-**Co**(1,2-$C_2B_9H_{10}$)$_2$-μ(8,8′)-O_2P(O)NEt_2	S, X(absolute configuration)	[984]
2-**Co**(1,7-$C_2B_9H_{10}$)$_2$-μ(6,6′)-X X = S^-, SMe (*d,l* only)	S, H, B, CD	[1034]
2-**Co**(1,7-$C_2B_9H_{10}$)$_2$-μ(6,6′)-S^-	X	[1035]
3-**Co**(1,2-$C_2B_9H_{10}$)$_2$-μ(8,8′)-SMe	S, H, B, MS	[1036]
3-**Co**(1,2-$C_2B_9H_{10}$)$_2$-μ(8,8′)-SMe_2^-	XPS	[928]
3-**Co**($C_2B_9H_{10}$)$_2$-μ(8,8′)-S_2CH	S, H, IR	[776]
	X	[1038]
	B	[923]
2-**Co**(1,7-$C_2B_9H_{10}$)$_2$-μ(8,8′)-S_2CH	S, IR, MS	[776]
3-**Co**(1,2-$C_2B_9H_{10}$)$_2$-μ(8,8′)-X (X = S_2CH, SMe, S_2Me, OMe)	XPS	[928]
3-**Co**(1,2-$C_2B_9H_{10}$)$_2$-μ(8,8′)-S_2CR-1,8-$C_{10}H_5NMe_2$H R = H, OH	S, X(R = H, OH in same crystal), H, B, IR, MS, COND	[1040]
Meso-3-**Co**(1,2-$C_2B_9H_{10}$)$_2$-μ[1,1′-S(CH_2)$_2$]$^-$	S, X, H, B, C, MS	[1041]
Meso-3-**Co**(1,2-$C_2B_9H_{10}$)$_2$-μ[1,1′-SO_2(CH_2)$_2$]$^-$	S, X, H, B, C, MS	[1041]
3-**Co**(1,2-$C_2B_9H_{10}$)$_2$-μ(8,8′)SCH_2C(O)OMe	X	[1042]
[1,2-$C_2B_9H_{10}$(SH)]**Co**[1,2-$C_2B_9H_{10}$(SCHO)]$^-$	S, H, IR	[776]
Na^+ 3-**Co**(1,2-$C_2B_9H_{10}$)$_2$-μ(1,1′)-[S(CH_2CH_2O)$_3CH_2CH_2$-S]$^-$	S, X, H, B, C, IR	[997]
3-**Co**(1,2-$C_2B_9H_{10}$)$_2$-μ(8,8′)-X X = SEt, SC_4H_9, SCH_2CH═CH_2	S, MS	[981]
3-**Co**(1,2-$C_2B_9H_{10}$)$_2$-μ(8,8′)-X X = SCH_2Ph, SCH_2C(O)OH, SCH_2C(O)OMe	S, MS	[981]
3-**Co**(1,2-$C_2B_9H_{10}$)$_2$-μ(8,8′)-EMe E = Se, Te	S, H, B, MS, UV	[1022]
3-LL′**Co**$_2$(1,2-$C_2B_9H_{11}$)$_2$ L,L′ = CO, $CNCMe_3$,PMe_2Ph	S, X[$(CO)_2$; CO, PMe_2Ph], H, B, C, IR	[911]
3-**Co**(1,2-$C_2B_9H_{11}$)$_2^-$ Cu(1,10-phenanthroline)$^{3+}$·MeCN	X	[1436]
3-**Co**(1,2-$C_2B_9H_{11}$)$_2$-8,8′-[O(CH_2OCH_2)$_2$R$^-$ K^+ R = *o*-$S_2C_6H_4$, S	X(*o*-$S_2C_6H_4$), H, B, C, IR, MS	[1589]
Cs^+ 3-**Co**(1,2-$C_2B_9H_{11}$)$_2^-$ Cs^+ interactions with calix[4]arene-bis(*t*-octylbenzo)-18-crown-6	H	[1446]
3-**Co**(1,2-$C_2B_9H_{10}$-8-X)$_2^-$ X = H, I	Anions cross through synthetic lipid bilayer membranes	[1536]
3-**Co**(1,2-$C_2B_9H_{10}$)$_2$-μ(8,8′)-PO_3H	Catalyst for ketimine hydrogenation to amines	[1537]
3-**Co**(1,2-$C_2B_9H_{11}$)$_2^-$ in ion-selective electrodes for protonatable *N*-containing analytes dopamine, nicotinic acid, nicotinamide, histamine and metformin in aqueous solutions	H, B, C, IR, MS	[1521]

Compound	Information	References
3-**Co**$(1,2\text{-}C_2B_9H_{10}X)_2^-$ X=H, Cl surfactant properties, aggregate formation	E, MS	[1525]
3-**Co**$(1,2\text{-}C_2B_9H_{11})_2^-(CH_2)_2O(CH_2)_2NHCH_2$-chlorin-e6$^+$ conjugate accumulation in cancer cells for BNCT and phototherapy	Fluorescence, cytotoxicity toward human lung adenocarcinoma	[1514]
3-**Co**$(1,2\text{-}C_2B_9H_{11})_2^-$ structure of composite with poly(ethylene oxide	S, solid state NMR (H, B, C, Na), wide angle X-ray scattering, isothermal titration calorimetry	[1441]
3-**Co**$(1,2\text{-}C_2B_9H_{11})_2^-$ conjugates with proteins in protein data bank (PDB) and HIV for BNCT		[1453]
3-**Co**$(1,2\text{-}C_2B_9H_8Cl_3)_2^-$ conjugates with 5-ethynyl-2′deoxyuridine	S, H, B, C, MS, cytotoxicity	[1497]
3-**Co**$(1,2\text{-}C_2B_9H_{11})_2^-$ counterion in Ba^{2+} beauvercin complexes		[1486]
3-**Co**$(1,2\text{-}C_2B_9H_{11})_2^-$ incorporation into DABCO (diazabicylcooctane) MOFs Ag···H–B interactions	S, X	[1490,1550]
3-**Co**$(1,2\text{-}C_2B_9H_{11})_2^-$ $(Ph_3P)_3Ag$–X–$Ag(Ph_3P)_3^+$ X=Cl, Br	S, X, IR	[1510]
Cyclo-$C_6[(Me_2CH\text{–}C_6H_3)_2(\mu\text{-}O(CH_2)_4O)_2^+$ 3-**Co**$(1,2\text{-}C_2B_9H_{11})_2^-$ derivatives.	Hexaarylbenzene-based receptor interaction of $HO(CH_2)_2NH_3^+$ cation	[1475]
3-**Co**$(1,2\text{-}C_2B_9H_{11})[1,2\text{-}C_2B_9H_{10}\text{-}8\text{-}O(CH_2)_2O(CH_2)_2R]^-$ R=NHC-(O)NH_3^+, SC(=NH_2^+)NH_2, NHC(=NH_2^+)NH_2, N$[(CH_2)_2OH]_3^+$, $[O(CH_2)_2]_4OH$, $[O(CH_2)_2]_4O^-$, OC_6H_4-*p*-C(O)OMe	Light scattering)/(solubility) suppression of self-assembly; biocompatibility	[1439]
3-**Co**$(1,2\text{-}C_2B_9H_{11})(1,2\text{-}C_2B_9H_{10}\text{-}8\text{-}I)^-$ Pd-catalyzed B-C_{vinyl} coupling		[1448]
3-**Co**$(1,2\text{-}C_2B_9H_{11})(1,2\text{-}C_2B_9H_{10})^-$-8-IR$^+$ R=Ph, C_6H_4-*p*-OMe reaction with nucleophiles to form carbonitrile, pyridinium, sulfonium, thiol, actoxy and amino derivatives	S, H, B, C	[1574]
3-**Co**$(1,2\text{-}C_2B_9H_{11})(1,2\text{-}C_2B_9H_{10})^-$-8-R R=I, $SCHNMe_2^+$	S, H, B, C, MS	[1574]
$(C_5H_4N)_2[(CH_2)_2O(CH_2)_2O\text{-}8\text{-}(1,2\text{-}C_2B_9H_{10})$**Co**$(1',2'\text{-}C_2B_9H_{10}\text{-}8'\text{-}X)]_2$ X=H, I probe for sequential voltage tuning	S, E	[1580]
$C_5H_4NMe)_2^{2+}$ 2[$(1,2\text{-}C_2B_9H_{10})$**Co**$(1',2'\text{-}C_2B_9H_{10}\text{-}8'\text{-}X)]^-$ X=H, I probe for sequential voltage tuning	S, E	[1580]
$(C_5H_4NMe)_2^{2+}$ 2[$(1,2\text{-}C_2B_9H_{11-n}I_n)_2$**Co**$^-$ n=0,1,3 probe for sequential voltage tuning	S, E	[1580]
3-**Co**$(1,2\text{-}C_2B_9H_{11})(1,2\text{-}C_2B_9H_{10}\text{-}8\text{-}CH{=}CHR)^-$ R=Ph,*p*-C_6H_4OH, *n*-C_4H_9, *n*-C_8H_{17}, CN, OH	S, X(Ph), H, B, C, MS	[1448]
3-**Co**$(1,2\text{-}C_2B_9H_{10}\text{-}8\text{-}CH{=}CH\text{–}C_6H_4\text{-}p\text{-}R)_2^-$ R=Me, F, Cl, Br, *m*-Br	S, X(Ph), H, B, C, MS	[1448]
3-**Co**$(1,2\text{-}(C_2B_9H_{11})(1,2\text{-}C_2B_9H_{10}\text{-}8\text{-}R)^-$ adenosine and 2′-deoxyadenosine derivatives	S, H, C	[1458]
H^+ 3-**Co**$(1,2\text{-}C_2B_9H_{11})_2^-$ monolayer vesicles→micelles	X-ray and neutron scattering	[1450]
3-**Co**$(1,2\text{-}C_2B_9H_{10})_2\text{-}8,8'\text{-}C_6H_4^-$ ansa-metallacyclophane	S, H, B, C, IR, MS, UV, E	[1456]
3-**Co**$(1,2\text{-}C_2B_9H_{10})_2\text{-}1.1'\text{-}P(E)Ph^-$ E=O, S, Se ansa-metallacyclophanes	S, H, B, C, IR, MS, UV, E	[1456]
3-**Co** $(1,2\text{-}C_2B_9H_{10})_2\text{-}1.1'\text{-}P(E)CMe_3^-$ E=O, S, Se ansa-metallacyclophanes	S, X, H, B, C, IR, MS, UV, E	[1456]
3-**Co**$(1,2\text{-}C_2B_9H_9)_2\text{-}1.1'\text{-}P(E)X\text{-}8,8'\text{-}C_6H_4^-$ X=$PCMe_3$, PPh, P(E)Ph; E=O, S, Se diansa-metallacyclophanes	S, X, H, B, C, IR, MS, UV, E	[1456]
3-**Co**$(1,2\text{-}C_2B_9H_{10}\text{-}10\text{-}I)_2^-$	S, X, H, B, C, IR, MS	[1459]
3-**Co**$(1,2\text{-}C_2B_9H_{10})_2\text{-}8,8'\text{-}CH_2OMe$	S, X, H, B, C, IR, MS	[1460]

Continued

Compound	Information	References
3-**Co**(1,2-$C_2B_9H_{11}$)(1,2-$C_2B_9H_{10}$-8-OMe_2)	S, H, B, C, IR, MS	[1460]
3-**Co**(1,2-$C_2B_9H_{10}$-8-OMe_2)$_2^-$	S, H, B, C, IR, MS	[1460]
3-**Co**(1,2-$C_2B_9H_{10}$-8-CH_2R)(1,2-$C_2B_9H_{10}$-8-OMe) R = py, NH_2-*n*-C_6H_{13}, $NH_2C_2H_4OH$, PPh_3	S, X(py, $NH_2C_2H_4OH$, PPh_3), H, B, C, IR, MS	[1460]
3-**Co**(1,2-$C_2B_9H_{10}$-8-CH_2-$OC_6H_4CMe_3$)(1,2-$C_2B_9H_{10}$-8-OMe)$^-$	S, H, B, C, IR, MS	[1460]
3-**Co**(1,2-$C_2B_9H_{10}$)$_2$-8,8-CH_2O^-	S, X, H, B, C, IR, MS	[1460]
3-**Co**(1,2-$C_2B_9H_{10}$-8-CH_2-O-calix[4]-arene(OCH_2CN)$_2$(OMe)(CMe_3)$_4$)(1,2-$C_2B_9H_{10}$-8-OMe)$^-$	S, X, H, B, C, IR, MS	[1460]
3-**Co**(1,2-$C_2B_9H_{11}$)[1,2-$C_2B_9H_{10}$-8-(OCH_2CH_2)$_n$OH]$^-$ M^+ *n* = 2,4,6,8,10 M = *cyclo*-$MeNC_3H_3N$-*n*-C_4H_9, *cyclo*-C_5H_5N-*n*-C_4H_9, *cyclo*-C_4H_8NMe-*n*-C_4H_9, *cyclo*-$C_5H_{10}NMe$-*n*-C_4H_9 glycolated low-melting salts	S, H, DSC, glass transition, MP	[1463]
3-**Co**[1,2-$C_2B_9H_{10}$-8-CMPO-(CH_2–CH_2O)$_2$][1′,2′-$C_2B_9H_{10}$-8′-X]$^-$ X = Cl, Br, I CMPO = $Ph_2P(O)CH_2C(O)$(*t*-C_8H_{17})N) for extraction of lanthanides and actinides from high-level activity nuclear waste		[1464]
3-**Co**[1,2-$C_2B_9H_{10}$-8-CMPO–(CH_2–CH_2O)$_2$][1′,2′-$C_2B_9H_{10}$-8′-X]$^-$ X = Cl, Br, I CMPO = $Ph_2P(O)CH_2C(O)$(*t*-C_8H_{17})N for extraction of Am^{3+} from high-level activity nuclear waste		[1466]
3-**Co**[1,2-$C_2B_9H_{10}$-8-(O–CH_2)$_2$–N(C_8H_{17})–C(O)CH_2]$_2$O for extraction of Am^{3+} from high-level activity nuclear waste		[1466]
3-**Co**[1,2-$C_2B_9H_{10}$-8-CMPO–(CH_2–CH_2O)$_2$][1′,2′-$C_2B_9H_{10}$-8′-X]$^-$ X = Cl, Br, I CMPO = $Ph_2P(O)CH_2C(O)$(*t*-C_8H_{17})N for extraction of M^{2+} in H_2O-nitrobenzene system M = Ba, Sr, Mg, Ni, Co, Zn, Cd, Mn, Cu, Pb		[1467]
3-**Co**[(1,2-$HO(CH_2)_nC_2B_9H_{10}$][1,2-$C_2B_9H_{11}$]$^-$ Cs^+ *n* = 1–3 alkylhydroxy derivatives	S, X(*n* = 2), H, B, C, MS	[1468]
syn/anti-3-**Co**[(1,2-$HO(CH_2)_nC_2B_9H_{10}$]$_2^-$ Cs^+ *n* = 1–3 alkylhydroxy derivatives	S, H, B, C, MS	[1468]
3-**Co**{1,2-[$HO(CH_2)_3$]$_2C_2B_9H_9$}{1,2-$C_2B_9H_{11}$}$^-$ Cs^+ alkylhydroxy derivatives	S, H, B, C, MS	[1468]
3-**Co**[(1,2-$(HO)_2(P(O)(CH_2)_3C_2B_9H_{10}$][1,2-$C_2B_9H_{11}$]$^-$ Cs^+ alkylhydroxy derivatives	S, X, H, B, C, MS	[1468]
[1,2-HOP(O){$O(CH_2)_3C_2B_9H_{10}$]**Co**[1,2-$C_2B_9H_{11}$]}$_2^{2-}$ Cs^+ alkylhydroxy derivatives	S, X, H, B, C, MS	[1468]
3-**Co**(1,2-$C_2B_9H_{11}$)(1,2-$C_2B_9H_{10}$-8-oligonucleotide)$^-$ electrochemical evaluation of DNA hybridization	E	[1473]
3-**Co**(1,2-$C_2B_9H_{10}$-8-R)(1,2-$C_2B_9H_{10}$-8′-R′)$^-$ R, R′ = H, OH, NH_2; RR′ = μ-NH_2^+, μ-S, μ-O_2PO_2; R = $O(CH_2)_2$–$O(CH_2)_2$R′ R′ = thiourea, urea, guanidine, arginine, amines, and related compounds inhibition of NO synthases activation	S, H, B, MS, fluorescence	[1474]
3-**Co**(1,2-$C_2B_9H_{10}$-8-I)(1,2-$C_2B_9H_{10}$-8′-*n*,*m*-$Me_2C_6H_3$)$^-$ *n*,*m* = 3,4; 3,5; 7,5	S, X(2,5), H, B, C, MS	[1476]
3-**Co**(1,2-$C_2B_9H_{10}$-8-I)(1,2-$C_2B_9H_{10}$-8′-R)$^-$ R = *p*-C_6H_4OMe, OPh, C_6H_4NMe	S, H, B, C, MS	[1476]
3-**Co**(1,2-$C_2B_9H_{10}$-8-I)(1,2-$C_2B_9H_{10}$-8′-PEt_3)	S, X, H, B, C, MS	[1476]
3-**Co**(1,2-$C_2B_9H_{11}$)(1,2-$C_2B_9H_{10}$-8-cholesterolyl) incorporation into liposomes; bidistribution in mice BNCT	S, H, B, C, IR, MS	[1485]
3,6,1,2-(1′,2′-$C_2B_9H_{11}$)$_2$**Co**$_2$($C_2B_8H_{10}$)-*n*,*n*′-$(OH)_2^{2-}$ *n*, *n*′ = 8,10; 8′,10; 8′,8	S, X[8,10-$(OH)_2$}, H, B, C, IR, HIV protease inhibition	[1478]

Compound	Information	References
3,6,1,2-(1′,2′-$C_2B_9H_{11})_2$**Co**$_2$($C_2B_8H_{10}$)-*n*,*n*′-$(OH)_2^{2-}$ *n*, *n*′=8,10; 8′,10; 8′,8	S, H, B, C, IR, HIV protease inhibition	[1478]
3,6,1,2-(1′,2′-$C_2B_9H_{11})_2$**Co**$_2$($C_2B_8H_9$)-8-R^- R=OC_4H_8, $O(CH_2)_4$L L=$C_4H_9NH_2$, C_5H_5N, Et_3N, PPh_3, $OC_6H_4CMe_3$, OC_6H_4OMe	S, H, B, C, IR, HIV protease inhibition	[1478]
n-C_4H_9)HN{$(CH_2)_4$O-8-[3,6,1,2-(1′,2′-$C_2B_9H_{11})_2$**Co**$_2$}$_2^{3-}$	S, H, B, C, IR, HIV protease inhibition	[1478]
[3-**Co**(1′,2′-$C_2B_9H_{11}$)(1,2-$C_2B_9H_{10}$-8-$O(CH_2)_2O(CH_2)_2$]$_2$$NHR^-$ Na^+ R=H, *n*-C_4H_9, CH_2CH_2OH, CMe_3, $C(CH_2OH)_3$, CH_2Ph, $(CH_2)_3SO_3^-$, 1,2-$C_2B_{10}H_{11}$, *nido*-7,8-$C_2B_9H_{11}^-$ metallacarborane pharmacophores	Solubility, lipophilicity (octanol-H_2O partition coefficient)	[1488]
[3-**Co**(1′,2′-$C_2B_9H_{11}$)(1,2-$C_2B_9H_{10}$-8-$O(CH_2)_2O(CH_2)_2$]$_2$$NR_2^{2-}$ $2Na^+$ R_2=SO_2Ph, 8,8′-(1,2-$C_2B_9H_{10})_2$**Co**, 2Et metallacarborane pharmacophores	Solubility, lipophilicity (octanol-H_2O partition coefficient)	[1488]
3-**Co**(1,2-$C_2B_9H_{11}$)(1,2-$C_2B_9H_{10}$)-8-$O(CH_2)_2O(CH_2)_2OC_6H_4$-*o*-$CH_2Ph^-$ conjugates with poly(2-ethyloxazoline) (PEOX) and polyethylene oxide biocompatible hydrophilic polymers; hybrid nanospheres	S, H, light-scattering, ATM, isothermal titration calorimetry, SAXS, transmission electron microscopy	[1496]
HRN[$(CH_2)_2O(CH_2)_2O$-8-(1,2-$C_2B_9H_{10}$)-3-**Co**(1,2-$C_2B_9H_{11}$)]$_2^-$ R=*n*-C_4H_9, H, $(CH_2)_2OH$, $(CH_2)_3C(O)OH$, $B_{10}H_9^{2-}$ conjugates with poly(2-ethyloxazoline) (PEOX) and polyethylene oxide biocompatible hydrophilic polymers; hybrid nanospheres	S, H, light-scattering, ATM, isothermal titration calorimetry, SAXS, transmission electron microscopy	[1496]
3-**Co**(1′,2′-$C_2B_9H_{11}$)(1,2-$C_2B_9H_{10}$-8-R)$^-$ R=C(O)H, Me, Et	Antimicrobial activity	[1501]
3-**Co**(1,2-$C_2B_9H_{10}$-8-I)$_2^-$ H^+ metallacarborane amphiphiles monolayered Θ-shaped lyotropic lamellar phases	Wide-angle X-ray scattering (SWAXS)	[1503]
[3-**Co**(1,2-$C_2B_9H_{11}$)(1′,2′-$C_2B_9H_{10}$-)](CMPO)$_3$-*t*-butyl-calix[4] arene]$^{n-}$ derivatives CMPO=carbamoyl methyl diphenyl phosphine oxide extraction of lanthanide and actinide 3+ cations	S, H, B, extraction of M^{3+} ions M=Eu, Am	[1506]
3-**Co**(1,2-$C_2B_9H_{10})_2$-8,8′-S_n-$(CH_2)_m$-estradiol *n*=0,1 *m*=1,2	S, X(*n*=1, *m*=1), activation of α and β estrogen receptors	[1507]
3-**Co**(1,2-$C_2B_9H_{11}$)(1′,2′-$C_2B_9H_{10}$-8′-R) R=deoxyuridine, deoxyguanosine phosphoramidites DNA oligomers	S, H, B, C, P, UV, MS, lipophilicity, antisense activity in MCF-7 cells, resistance to degradation by snake venom	[1508]
3-**Co**(1,2-$C_2B_9H_{10}$-9-CH═$CH_2)_2$	S(Pd-catalyzed cross-coupling), IR, MS	[1512]
3-**Co**(1,2-$C_2B_9H_{11}$)[1′,2′-$C_2B_9H_{10}$-8′-$O(CH_2)_5$R]$^-$ R=N_3, NC_2HR'; R′=CH_2OH, $(CH_2)_2OH$, Ph, C_5H_4FeCp	S, H, B, C, MS	[1517]
3-**Co**(1,2-$C_2B_9H_{11}$)[1′,2′-$C_2B_9H_{10}$-8′-$O(CH_2)_2$—$O(CH_2)_2N_3C_2HR]^-$ R=CH_2OH, $(CH_2)_2OH$, Ph, $(CH_2)_6Me$, C_5H_4FeCp, hydroxyestraacetate	S, H, B, C, MS	[1517]
3-**Co**(1,2-$C_2B_9H_{11}$)[1′,2′-$C_2B_9H_{10}$-8′-$O(CH_2)_2$—X—$(CH_2)_2$–O-$(CH_2)_2C$≡$CH]^-$ X=O, CH_2	S, H, B, C, MS	[1517]
3-**Co**(1,2-$C_2B_9H_{11}$)[1′,2′-$C_2B_9H_{10}$-8′-$O(CH_2)_2$—X—$(CH_2)_2$-O-$(CH_2)_2CHN_3$—$CH_2C(O)OMe]^-$ X=O, CH_2 triazole	S, H, B, C, MS	[1517]
N_3C_2H-*C*,*N*-[$(CH_2)_2$–$O(CH_2)_2$–$O(CH_2)_2$—O-8-(1,2-$C_2B_9H_{11}$)-3-**Co**-(1′,2′-$C_2B_9H_{11}$)]$_2^{2-}$ triazole	S, H, B, C, MS	[1517]
3-**Co**(1,2-$C_2B_9H_{10}$)($C_2B_9H_9$)(μ-H)$_3$CuPh	S, X, H, B, P	[1518]
3-**Co**(1,2-$C_2B_9H_{11})_2^-$ $Cu(PPh_3)_3^+$	S, X, H, B, P	[1518]
3-**Co**{1,2-$C_2B_9H_{10}$-9-C≡C—C_6H_3-3′,5′-$[C(O)OH]_2$}$_2^-$ PPh_4^+ incorporation in Cu_2O_8 paddlewheel MOFs with 3 topologies	S, X, H, B	[1520]
3-**Co**(1,2-$C_2B_9H_{11}$)(1,2-$C_2B_9H_{10}$-8-R) R=$O(CH_2)_2$-O$(CH_2)_2NMe_2(CH_2)_3$NH-*bicyclo*-$C_5HN_4(NH_2)$-*cyclo*-$C_4H_{5(}OH)$ (CH_2OH)O deoxyadenosine	S, H, B, C, cytotoxicity	[1522]

Continued

Compound	Information	References
3-**Co**(1,2-$C_2B_9H_{11}$)(1,2-$C_2B_9H_{10}$-8-R)$^-$ R = $O(CH_2)_2O(CH_2)_2SMe_2^+$, $O(CH_2)_2OH$, $O(CH_2)_2O(CH_2)_2SMe$, $O(CH_2)_2O(CH_2)_2SC_4H_4O^+$, $O(CH_2)_2O(CH_2)_2S(CH_2)_2C[C(O)OMe][NH(O)OCMe_3$, $O(CH_2)_2O(CH_2)_2S^+$-9′-*nido*-7′,8′-$C_2B_9H_9^-$, $O(CH_2)_2O(CH_2)_2PPh_3^+$, $O(CH_2)_2O_3SMe$, $O(CH_2)_2N_3$, $O(CH_2)_2(NH_2)_2^+$, $O(CH_2)_2SH$, $O(CH_2)_2N_3C_2HPh$	S, H, B, C, MS	[1577]
3-**Co**(1,2-$C_2B_9H_{11}$)$_2^-$ imaging in living cells	Raman (B–H)	[1524]
3-**Co**(1,2-$C_2B_9H_{11}$)(1,2-$RC_2B_9H_{10}$)$^-$ R = C(O)OH, $CH_2C(O)OH$, $(CH_2)_2C(O)OH$, $OCH_2C(O)OH$, $(CH_2)_nC(O)$–C_6H_4–*p*–NO_2 (*n* = 1,2), $(CH_2)_nC(O)NHR$ *n* = 1,2; R = *n*-C_4H_9, CH_2Ph	S, H, B, C	[1528]
3-**Co**(1,2-$C_2B_9H_{11}$)(1,2-$RC_2B_9H_{10}$)-1-$CH_2C(O)NH(CH_2)_2$-1′-(1′,2′-$C_2B_9H_{10}$)Co(1′,2′-$C_2B_9H_{11}$)$^{2-}$	S, H, B, C	[1528]
3-**Co**(1,2-$C_2B_9H_{11}$)(1,2-$C_2B_9H_{10}$-8-C_6H_4—R)$^-$ R = *p*-CH═CH_2, *m*/*p*-CHO	S(Pd-catalyzed B–C cross-coupling), X, H, B, C, IR, MS	[1531]
3-**Co**(1,2-$C_2B_9H_{10}$-8-I)(1′,2′-$C_2B_9H_{10}$-8′-R) R = *cyclo*-$S(CH_2)_2(O)(CH_2)_2$, ONPy, *cyclo*-$O(CH_2)_5$ charge-compensated ligand	S, X(ONpy), H, B, C, MS	[1533]
3-**Co**(1,2-$C_2B_9H_{11}$)(1,2-$C_2B_9H_{10}$)-8-O[$(CH_2)_2O]_n$-8′-(1,2-$C_2B_9H_{10}$)**Co**(1,2-$C_2B_9H_{11}$) *n* = 5,6 aqueous self-assembly and cation selectivity	S, X(*n* = 6), H, B, C, IR, MS, dynamic light scattering, cation exchange with H^+, Li^+, Rb+, Cs^+, and NMe_4^+	[1535]
3-**Co**(1,2-$C_2B_9H_{11}$)(1,2-$C_2B_9H_{10}$)-8-O[$(CH_2)_2O](CH_2)_nC_6H_4$-*p*-$(CH_2)_n$-O[$(CH_2)_2O$]-8′-(1,2-$C_2B_9H_{10}$)**Co**(1,2-$C_2B_9H_{11}$) *n* = 0,1 aqueous self-assembly and cation selectivity	S, H, B, C, IR, MS, dynamic light scattering, cation exchange with H^+, Li^+, Rb+, Cs^+, and NMe_4^+	[1535]
(fumaramide rotaxanes)$^{2+}${3-**Co**(1,2-$C_2B_9H_8Br_3$)(1,2-$C_2B_9H_7Br_3$)-8-O[$(CH_2)_2O]^-$}$_2$ pirouetting motion	S, H	[1538]
3-**Co**(1,2-$C_2B_9H_{10}$-8-^{125}I)(1′,2′-$C_2B_9H_{10}$)-8′-$[O(CH_2)_2]_2$–OC(O)Ph$^-$ in vivo imaging	S, IR, MS, biodistribution in rodents	[1545]
3-**Co**(1,2-$C_2B_9H_{10}$-8-R)(1′,2′-$C_2B_9H_{10}$-8′-R′)$^-$ R = I; R′ = OH, OMe, OEt, OBu, $OCH_2C{\equiv}CH$, $O(CH_2)_2C{\equiv}CH$, $O(CH_2)_2Br$, $O(CH_2)_2OH$, Br	S, X(OH), H. B, C, MS	[1548]
3-**Co**(1,2-$C_2B_9H_{10}$-8-R)(1′,2′-$C_2B_9H_{10}$-8′-R′)$^-$ R = OH; R′ = OH, OBu	S, H. B, C, MS	[1548]
3-**Co**(1,2-$C_2B_9H_{10}$-8-OBu)$_2^-$	S, H. B, C, MS	[1548]
3-**Co**(1,2-$C_2B_9H_{11}$)(1′,2′-$C_2B_9H_{10}$)$^-$-8′-$[O(CH_2)_2]_2$-X-$(CH_2)_3SiO_3$-silica X = NH_2^+, S stationary phases for HTPLC		
Na^+[3-**Co**(1,2-$C_2B_9H_{11}$)(1′,2′-$C_2B_9H_{10}$)-8′-$[O(CH_2)_2]_2[O(CH_2)_4]_nOH]^-$ *n* = 1–22 redox-active polymers for surface modification	S, H, B, C, IR, MS, E	[1551]
Na^+[3-**Co**(1,2-$C_2B_9H_{10}$)$_2$-μ(8,8′)-$(CH_2)_4[O(CH_2)_2]_2O^-$	S, X, H, B, C, IR, MS, E	[1551]
3-**Co**(1,2-$RC_2B_9H_{10}$)(1′,2′-$C_2B_9H_{11}$)$^-$ R = *bicyclo*-$COC(CH_2)_nNC(O)$-C_6H_4 *n* = 2,3 oxazolo-isoindalone	S, X, H, B, C, MS	[1564]
3-**Co**(1,2-$RC_2B_9H_{11}$)(1′,2′-$C_2B_9H_{10}$)$^-$ R = $C(O)C_6H_4$-*o*-$C(O)N(CH_2)_3$ azetidin	S, X, H, B, C, MS	[1564]
3-**Co**(1,2-$C_2B_9H_{10}$)$_2$-1,1′-*bicyclo*-$COC(O)C_6H_4^-$ benzofuran	S, X, H, B, C, MS	[1564]
3-**Co**[1,2-$(H_2NCH_2)R_2C_2B_9H_{10}$](1′,2′-$C_2B_9H_{11}$)$^-$	S, X, H, B, C, MS	[1564]
(1,2-$C_2B_9H_{11}$)**Co**{1,2-[$XO(CH_2)_n$]$C_2B_9H_{10}$}$^-$ *n* = 1–3 X = SO_2Me, $SO_2C_6H_4Me$	S, X(*n* = 2, X = SO_2Me), H, B(2d), C	[1587]
Co{1,2-[$XO(CH_2)_n$]$C_2B_9H_{10}$}$_2^-$ *n* = 1,2 X = SO_2Me, $SO_2C_6H_4Me$	S, H, B(2d), C	[1587]

Compound	Information	References
$(1,2\text{-}C_2B_9H_{11})\mathbf{Co}\{1,2\text{-}[RR'N(CH_2)_n]C_2B_9H_{10}\}^-$ $n=1$–3 R = H, Et; R′ = CH_2Ph, n-C_4H_9, Et	S, H, B(2d), C	[1587]
$\mathbf{Co}\{1,2\text{-}[H_2N(CH_2)_2C_2B_9H_{10}]_2\}^-$	S, H, B(2d), C	[1587]
$\mathbf{Co}(1,2\text{-}C_2B_9H_{10})_2\text{-}1,1'\text{-}CH_2NRCH_2^-$ R = H, n-C_4H_9	S, H, B(2d), C	[1587]
Closo-commo-$(C_2B_9)Co(C_2B_8)$ clusters		
$(C_2B_9H_{11})_2\mathbf{Co}_x(C_2B_8H_{10})_{x-1}^{x-}$ $x=2$–7	Raman	[927]
$[(2,3\text{-}C_2B_8H_{10})\mathbf{Co}(1,2\text{-}C_2B_9H_{11})]^-$	E	[309]
$[2,3\text{-}C_2B_8H_9\text{-}7\text{-}C_5H_5N]\mathbf{Co}[1,2\text{-}C_2B_9H_{11}]$	S, H, B, IR, UV	[456]
$[2,3\text{-}C_2B_8H_{11}\text{-}11\text{-}C_5H_5N]\mathbf{Co}[1,2\text{-}C_2B_9H_{11}]^-$	S, H, B, IR, UV	[456]
	X	[458]
$Mn[1,10\text{-}C_{12}H_8N_2)_3]^{2+}$ $(1,2\text{-}C_2B_9H_{11})\mathbf{Co}(1,2\text{-}C_2B_8H_{10})\mathbf{Co}(1,2\text{-}C_2B_9H_{11})^{2-}\cdot MeCN$	S, X	[1043]
$(1,2\text{-}C_2B_9H_{11})\mathbf{Co}(1,2\text{-}C_2B_8H_{10})\mathbf{Co}(1,2\text{-}C_2B_8H_{10})\mathbf{Co}(1,2\text{-}C_2B_9H_{11})^{3-}$	S, H, IR, UV, E	[924]
	X	[1044]
	B	[1045]
$[(1,2\text{-}C_2B_9H_{11})\mathbf{Co}(1,2\text{-}C_2B_8H_{10})\mathbf{Co}(2,n\text{-}C_2B_8H_{10})]^{2-}$ $n=3,4$	S, H, B, IR, UV	[460]
$(1,2\text{-}C_2B_9H_{11})\mathbf{Co}(1,2\text{-}C_2B_8H_{10})\mathbf{Co}(1,2\text{-}C_2B_9H_{11})^{2-}$	E	[872]
	MAG	[929]
	COND, aggregation in H_2O; dynamic and static light-scattering; atomic force microscopy; scanning electron microscopy	[932]
$(1,2\text{-}C_2B_9H_{11})\mathbf{Co}(1,2\text{-}C_2B_8H_{10})\mathbf{Co}(1,2\text{-}C_2B_9H_{11})^{n-}$	MAG	[1048]
Closo-$Co_2C_2B_8$ clusters		
$2,n,1,7\text{-}Cp_2\mathbf{Co}_2(C_2B_8H_{10})$ $n=4$, 10	S, H, B, IR, MS, E	[447]
$2,7,1,12\text{-}Cp_2\mathbf{Co}_2(C_2B_8H_{10})$	S, H, B, IR, MS, UV, E	[307]
$2,8,1,12\text{-}Cp_2\mathbf{Co}_2(C_2B_8H_{10})$	S, H, B, IR, MS, E	[447]
$2,9,1,12\text{-}Cp_2\mathbf{Co}_2(C_2B_8H_{10})$	S, H, B, IR, MS, E	[447]
$3,4,1,2\text{-}Cp_2\mathbf{Co}_2(C_2B_8H_{10})$	S, H, B, IR, MS, UV	[308]
$3,6,1,2\text{-}Cp_2\mathbf{Co}_2(C_2B_8H_9)\text{-}n\text{-}HgCl$ $n=8$, 9	S, X($n=8$), H, B	[1053]
	E ($n=9$)	[873]
$3,6,1,2\text{-}Cp\mathbf{Co}_2(C_2B_8H_6(HgCl)_4$	S, H, B	[1053]
$3,6,1,2\text{-}Cp_2\mathbf{Co}_2(RC_2B_8H_9)$ R = $HOCH_2$, CHO	S, IR	[1054]
$3,6,1,2\text{-}Cp_2\mathbf{Co}_2(C_2B_8H_8)\text{-}8,9\text{-}[OC(O)CF_3]_2$	S, H, B	[1053]
$3,6,1,2\text{-}CpL\mathbf{Co}_2(C_2B_8H_{10})$ L = n-C_4H_9-C_5H_4, PhC_5H_4	S, H	[1055]
$3,6,1,7\text{-}Cp_2\mathbf{Co}_2(C_2B_8H_{10})$	S, H, B, MS	[314]
$3,9,1,7\text{-}Cp_2\mathbf{Co}_2(C_2B_8H_{10})$	S, H, B, MS	[314,447]
$6,9,1,7\text{-}Cp_2\mathbf{Co}_2(C_2B_8H_{10})$	S, H, B, MS	[314,447]
Closo-$CoPC_2B_8$ clusters		
$1,2,3,6\text{-}(C_4Me_4)\mathbf{Co}(\mathbf{P}C_2B_8H_9\text{-}5\text{-}R)$ R = H, Cl	S, H, B, P, E(Cl)	[1056]
$1,2,4,8\text{-}(C_4Me_4)\mathbf{Co}(\mathbf{P}C_2B_8H_9\text{-}5\text{-}Cl)$	S, X(H), H, B, P, E	[1056]
$1,2,3,10\text{-}(C_4Me_4)\mathbf{Co}(\mathbf{P}C_2B_8H_9\text{-}5\text{-}Cl)$	S, H, B, P	[1056]

Continued

Compound	Information	References
Closo-CoMC$_2$B$_8$ clusters		
(C$_8$H$_{12}$)**Pt**Cp**Co**(C$_2$B$_8$H$_{10}$)	H	[1057]
Nido-Co$_2$C$_4$B$_6$ clusters		
Cp*$_2$**Co**$_2$(Et$_4$C$_4$B$_6$H$_6$)	S, H, B, IR, UV, MS	[129]
Cp*$_2$**Co**$_2$(Et$_4$C$_4$B$_6$H$_6$)	S	[31,162]
(NC$_4$Me$_4$)$_2$**Co**$_2$(Et$_4$C$_4$B$_6$H$_6$)	S, H, B, IR, UV, MS	[129]
Cp*$_2$**Co**$_2$(C$_4$B$_6$H$_8$Cl$_2$)	S, H, B, IR, MS	[148]
Rhodium		
Closo-RhCB$_{10}$ clusters		
(Ph$_3$P)X**Rh**(Me$_3$CNH$_2$-CB$_{10}$H$_{10}$) X = Br, Cl	S, X(Br), H, B, C, P	[861]
(Ph$_3$P)X(Me$_3$CNH$_2$)**Rh**(Me$_3$CH$_2$N-CB$_{10}$H$_{10}$) X = Br, Cl	S, H, B, C, P	[861]
(Ph$_3$P)(Me$_3$CNH$_2$)$_2$**Rh**(Me$_3$CH$_2$N-CB$_{10}$H$_{10}$) X = Br, Cl	S, X, H, B, C, P	[861]
Other derivatives of preceding		[861]
2,1-(Ph$_3$P)$_2$H**Rh**(CB$_{10}$H$_{10}$-1-NH$_2$)	S, H, P, IR	[1065]
2,1-Br(Ph$_3$P)**Rh**[(NHRR′)CB$_{10}$H$_{10}$] R = H, CH$_2$CH═CHMe; R′ = CH$_2$CH═CHMe	S, X, H, P, IR	[1066]
2,1-Cl(Ph$_3$P)**Rh**[(Me$_3$N)CB$_{10}$H$_{10}$]	S, H, B, P	[1067]
2,1-(MeC$_6$H$_5$)**Rh**[(Me$_3$CNH)CB$_{10}$H$_{10}$]	S, H, B, C	[1069]
2,1-(1,3,5-C$_6$H$_3$Me$_3$)**Rh**[(Me$_3$CNH)CB$_{10}$H$_{10}$]	S, X, H, B, C	[1069]
2,1-(C$_{16}$H$_{16}$)**Rh**[(Me$_3$CNH)CB$_{10}$H$_{10}$] C$_{16}$H$_{16}$ = paracyclophane	S, X, H, B, C	[1069]
2,1-(CO)$_2$**Rh**$_2${[(Me$_3$CNH)CB$_{10}$H$_{10}$]}$_2$	S, X, H, B, C	[1069]
2,1-[HC(pyrazolyl)$_3$**Rh**[(Me$_3$CNH)CB$_{10}$H$_{10}$]$^+$	S, X, H, B, C	[1069]
Related derivatives		[1069]
2,1-(Ph$_3$P)$_2$H**Rh**[(Me$_3$N)CB$_{10}$H$_{10}$]	S, H, P, IR	[1070]
2,1-(Ph$_3$P)X**Rh**{[(CH$_2$═CH–CH$_2$)$_2$N]CB$_{10}$H$_{10}$} X = Cl, Br	S, H, C, P	[1071]
2,1-Cl(Ph$_3$P)**Rh**[(Me$_2$C═NH)CB$_{10}$H$_{10}$]	S, X, H, B, C, P	[1072]
2,1-(Ph$_3$P)**Rh**[(O═CRNH)CB$_{10}$H$_{10}$] (**Rh**-O) R = Me, CMe═CH$_2$, *exo*-CH═CHMe, Ph	S, X(CMe═CH$_2$), H, B, C, P	[1072]
Related derivatives		[1072]
Closo-RhC$_2$B$_9$ clusters		
Mono(dicarbollyl) Rh complexes		
*CpRh(C$_2$B$_9$) and Cp*Rh(C$_2$B$_9$) complexes*		
3,1,2-Cp***Rh**(LC$_2$B$_9$H$_{10}$) L = PPh$_2$, P(S)Ph$_2$	S, X. H, B, P, IR	[1424]
[3,1,2-Cp***Rh**(C$_2$B$_9$H$_{10}$)-PPh$_2$Ag(OC$_4$H$_8$)]$_2$(μ-SO$_3$CF$_3$)$_2$	S, X. H, B, P, IR	[1424]
3,1,2-(η^5-C$_5$R$_5$)**Rh**(C$_2$B$_9$H$_{10}$-4-SMe$_2$)$^+$ R = H, Me	S, X(Me), H, B, P	[1077]
Other (hydrocarbon)Rh(C$_2$B$_9$) complexes		
3,1,2-(η^5-EtC$_5$H$_4$)**Rh**(Me$_2$C$_2$B$_9$H$_9$)	S, H, B, MS	[1080]
3,1,2-(η^2,η^3-H$_2$C═CH–C$_5$H$_4$)**Rh**(RR′C$_2$B$_9$H$_9$) R = H, Me; R′ = H, Me, Ph vinylcyclopentadienyl	S, H, B, C	[1081]

Compound	Information	References
3,1,2-(C_7H_8)**Rh**($Me_2C_2B_9H_9$)$^-$ C_7H_8 = norbornadiene	S, H	[1080]
3,1,2-($C_7H_7CH_2$)**Rh**($RR'C_2B_9H_9$) R = H, Me, Ph;		
R′ = H, Me $C_7H_7CH_2$ = 2-methylenenorbornadienyl	S, X(Me_2), H, C	[1082]
2,1,7-($C_7H_7CH_2$)**Rh**($C_2B_9H_{11}$) $C_7H_7CH_2$ = 2-methylenenorbornadienyl	S, H, C, IR, MS	[1082]
"*Pseudocloso*"-3,1,2-($C_7H_7CH_2$)**Rh**[(*p*-$MeC_6H_4)_2C_2B_9H_9$] C_7H_7 = norbornadienyl	S, X	[1083]
3,1,2-($C_7H_7CH_2$)**Rh**[($PhCH_2$)$C_2B_9H_{10}$] C_7H_7 = norbornadienyl	S, X, H	[1085]
3,1,2-($C_7H_7CH_2$)**Rh**($MePhC_2B_9H_9$) C_7H_7 = norbornadienyl	S, H	[1086]
3,1,2-(R″$_2C_8H_n$)**Rh**($RR'C_2B_9H_9$) *n* = 9,11; R,R′ = *o*-$(CH_2)_2C_6H_4$, Me; R″ = H, Me	S, H	[1086]
3,1,2-(η^4-C_8H_{12})**Rh**($RR'C_2B_9H_9$)$^-$ RR′ = Me_2, H_2, HPh	S, H	[1089]
3,1,2-(η^4-C_8H_{12})**Rh**($C_2B_9H_{10}$-4-SMe_2)	S, X, H, B, IR	[1091]
3,1,2-(η^3-C_8H_{13})**Rh**($Me_2C_2B_9H_9$) C_8H_{13} = xylylene	S, H, B	[1078]
3,1,2-(η^3-C_8H_{13})**Rh**($MePhC_2B_9H_9$)	UV (detailed; photometric detection)	[1000]
3,1,2-(η^3-C_8H_{13})(CO)**Rh**($Me_2C_2B_9H_9$) (C_8H_{13} = xylylene)	S, H, C	[1087]
3,1,2-(η^3-C_8H_{13})**Rh**{[*o*-$C_6H_4(CH_2)_2$]$C_2B_9H_9$} 2 isomers C–H···M C_8H_{13} = xylylene	S, H(2d, variable temp), C(HETCOR), IR	[1095]
3,1,2-(η^3-C_8H_{13})**Rh**[(PhS)R′$C_2B_9H_8$D] R = Ph, Me	S, H, B, C, IR	[1096]
3,1,2-(C_9H_7)**Rh**($PhC_2B_9H_{10}$) C_9H_7 = indenyl	X	[1097]
3,1,2-(C_9H_7)**Rh**[($MeOCH_2)_2C_2B_9H_9$] C_9H_7 = indenyl	S, H, B(2d), IR	[1097]
3,1,2-(C_9Me_7)**Rh**($PhC_2B_9H_{10}$) C_9Me_7 = heptamethylindenyl	S, X, H, B, IR	[1098]
3,1,2-($C_9H_2Me_5$)**Rh**($C_2B_9H_{11}$) pentamethylindenyl	S, X, H, B	[1099]
"*Pseudocloso*"-3,1,2-(C_9Me_7)**Rh**($Ph_2C_2B_9H_9$)	S, X, H, B(2d), IR	[1098]
3,1,2-(η^3-dicyclopentenyl)**Rh**($RR'C_2B_9H_9$)$^-$ C—H···**Rh** R = H, Me; R′ = H, Me, CH═CH_2, CMe═CH_2, CH_2OH	S, X(H, CH═CH_2; H, CH_2OH), H, C	[1100]
3,1,2-(η^4-$C_{10}H_{12}$)**Rh**($HOCH_2$-$C_2B_9H_{10}$)$^-$	S, X, H	[1101]
3,1,2-Cp**M**($Me_2C_2B_9H_8$)-4-SMe_2^+ **M = Rh, Ir**	S, X(Rh), H, B	[1592]
3,1,2-Cp**M**($Me_2C_2B_9H_8$)-4-SMe **M = Rh, Ir**	S, X(Rh), H, B	[1592]
(borole)Rh(C_2B_9) complexes		
3,1,2-Cp*Rh(C_6H_5)-(H_4C_4B)**Rh**($C_2B_9H_{10}$-4-SMe_2)$^{2+}$	S, B	[1102]
3,1,2- Cp*Ir(H_4C_4B-Ph)**Rh**($C_2B_9H_{10}$-4-SMe_2)$^{2+}$	S, X, B	[1102]
3,1,2-($C_2B_9H_{10}$-4-SMe_2)**Rh**(H_4C_4B)-(C_6H_5)**Ir**($C_2B_9H_{10}$-4-SMe_2)$^{2+}$	S, H, B	[1102]
(phosphino)Rh(C_2B_9) complexes		
3,1,2-(Et_3P)**Rh**($C_2B_9H_{10}$)-Rh(CODH)$C_2B_9H_{10}$ C–C (COD = cyclooctadiene)	S, X, H, B, P	[1105]
3,1,2-($Et_3P)_2$H**Rh**($C_2B_9H_9$-6,10-D_2)	S, B	[1104]
3,1,2-($Et_3P)_2$H**Rh**($C_2B_9H_8$-3,4,7-D_3)	S, B	[1104]
3,1,2-($Et_3P)_2$H**Rh**($C_2B_9H_6$-4,5,6,7,11-D_5)	S, B	[1104]
3,1,2-($Et_3P)_2$H**Rh**($C_2B_9H_{10}$-6-Ph)	S, B	[1104]
[3,1,2-(R_3P)**Rh**($C_2B_9H_{11}$)]$_2$ R = Et, Me_2Ph	S, H, B, P	[1105]
3,1,2-($Et_3P)_2$H**Rh**[(μ-$CH_2)_3C_2B_9H_9$]	S, H, B, P, IR	[1107]

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Compound	Information	References
3,1,2-$(Et_3P)_2H$**Rh**$[(\mu\text{-}CH_2C_6H_4CH_2)C_2B_9H_9]$	S, H, B, P, IR	[1107]
$[2,1,8\text{-}(Et_3P)_2H$**Rh**$(MePhC_2B_9H_9)]_2$	S, H, B, P, IR	[1107]
2,1,8-$(Et_3P)_2H$**Rh**$(MePhC_2B_9H_9)$	X	[1108]
3,1,2-$(Et_3P)_2H$**Rh**$(Me_2C_2B_9H_9)$	S, H, B, P, IR	[1107]
3,1,2-$(Ph_3P)_2D$**Rh**$(C_2B_9H_{11})$	IR	[1104,1113]
3,1,2-$(Ph_3P)_2H$**Rh**$(H_2C_2B_9D_9)$ deuterium exchange	S, H, IR	[1114]
d-3,1,2-$(Ph_2H$**Rh**$(MeC_2B_9H_{10})$	X, P, OR	[1112]
3,1,2/2,1,7-$(Ph_3P)_2$**Rh**$(C_2B_9H_{11})^-$	S, X, P	[1115]
2,1,12-$(Ph_3P)_2$**Rh**$(C_2B_9H_{11})^-$	S, P	[1115]
$[3,1,2\text{-}(Ph_3P)$**Rh**$(PhC_2B_9H_{10})]_2$ Rh–Rh	S, X, B, P	[1105]
2,1,7-$(PhMe_2P)_2H$**Rh**$(C_2B_9H_{11})$	S, H, P	[835]
3,1,2-$(Ph_3P)_2(HSO_4)$**Rh**$(C_2B_9H_{11})$	S, X, H, B, P, IR	[1117]
3,1,2-$(Ph_3P)_2(NO_3)$**Rh**$(C_2B_9H_{11})$	S, X, H, B, IR	[1118]
	P	[1117]
3,1,2-$(Ph_3P)[\eta^2\text{-}SC(H)PPh_3]$**Rh**$(C_2B_9H_{11})$	S, X, H, B, IR	[1118]
2,1,7-$[\eta^2\text{-}S(H)C{=}C(PPh_3)S]$**Rh**$(C_2B_9H_{11})$	S, X, H, B, IR	[1118]
$(Ph_3P)(C_2H_4)$**Rh**$(C_2B_9H_{11})^-$ isomers R = CO, C_2H_4		[1115]
2,1,7-$(Ph_3P)_2H$**Rh**$(MePhC_2B_9H_9)$	S, X, H, B, P, IR	[1119]
3,1,2-$(Ph_3P)_2H$**Rh**$(RC_2B_9H_{10})$ R = H, Me, *n*-C_4H_9, Ph hydrogenation catalyst	S, H, P	[835]
3,1,2-$(Ph_3P)_2H$**Rh**$(C_2B_9H_{10})$-7-NC_5H_5	S, H, P	[835]
2,1,7-$(Ph_3P)_2H$**Rh**$(RC_2B_9H_{10})$ R = H, Me, Ph	S, H, P	[835]
3,1,2-$(Ph_3P)_2H$**Rh**$(C_2B_9H_{10})$-4-polystyrylMe	XPR	[1111]
3,1,2-$(Ph_3P)_2H$**Rh**$(C_2B_9H_{10}$-6-R) R = PhCONH, NMe_2 hydrosilylation catalyst	S	[1120]
3,1,2-$(Ph_3P)_2H$**Rh**$(C_2B_9H_{10})$-1-CH_2-*cyclo*-$N_3P_3(C_5H_{10}N)_4Me$	S, H, P, IR	[619]
$[3,1,2\text{-}(Ph_3P)_2H$**Rh**$(C_2B_9H_{10})$-1-$CH_2PMeNP(C_5H_{10}N)_2N]_n$	S, P, IR	[619]
3,1,2-$(Ph_3P)H$**Rh**$(PhC_2B_9H_{10})$ enantiomers	OR	[1121]
3,1,2-$(Ph_3P)_2Cl$**Rh**$(C_2B_9H_{11})$	S	[1123]
2,1,7-$(Ph_3P)Cl$**Rh**$(RR'C_2B_9H_9)$ R = H, Me; R′ = Ph, Me	S, H, P	[1112]
3,1,2-$(Ph_3P)Cl_2$**Rh**$(C_2B_9H_{11})^-$	S, H, B, P, IR	[1124]
3,1,2-$(Ph_3P)(CO)Cl$**Rh**$(C_2B_9H_{11})$	S, P, IR	[1113,1123]
3,1,2-$(Ph_3P)_2Br$**Rh**$(C_2B_9H_{11})$	S, H, P, IR	[1113]
3,1,2-$(Ph_3P)Br_2$**Rh**$(C_2B_9H_{11})^-$ K^+(18-crown-6)	S, H, B, P, IR	[1124]
3,1,2-$(Ph_3P)I_2$**Rh**$(C_2B_9H_{11})^-$	S, H, B, P, IR	[1124]
3,1,2-$(Ph_3P)_2H$**Rh**$[(\mu\text{-}CH_2C_6H_4CH_2)C_2B_9H_9]$	S, H, P(variable temp), IR	[1107]
	X	[1108]
3,1,2-$(Ph_3P)_2$**Rh**$(C_2B_9H_{11})^+$ BPh_4^-	S, H, B, IR, UV, E	[827]

Compound	Information	References
2,1,7-(CO)(Ph_3P)**Rh**($C_2B_9H_{10}$)-10-$CHLC_6H_4Me$) L = PMe_3, PEt_3, PMe_2Ph	S, X(PEt_3), H, B, C, P, IR	[1125]
Related derivatives		[1125]
3,1,2-(Ph_3P)(CO)**Rh**($C_2B_9H_{10}$)-4-NC_5H_5	X	[1126]
3,1,2-H(PPh_3P)$_2$**Rh**{[PhNHC(O)]$_2$$C_2B_9H_{10}$} hydrosilylation catalyst	S, IR	[1127]
{3,1,2-H(PPh_3P)$_2$**Rh**[HNPhNHC(O)](CO)$C_2B_9H_{10}$}$_n$ hydrosilylation catalyst	S, IR	[1127]
3,1,2-(Ph_3P)(CO)**Rh**($Me_2C_2B_9H_9$)$^-$	S, H, C, P, IR	[1128]
3,1,2-(Ph_3P)(CO)H**Rh**($Me_2C_2B_9H_9$)	S, H, C, P, IR	[1128]
3,1,2-(NO)(Ph_3P)**Rh**($Me_2C_2B_9H_9$)	S, H, B, C, P, IR	[1092]
3,1,2-(Ph_3P)[η^2-C(C_6H_5)NOC(=O)]**Rh**($C_2B_9H_{11}$)$^-$	S, H, P, IR	[1129,1130]
3,1,2-(Ph_3P)[η^2-C(*m*-C_6H_4F)NOC(=O)]**Rh**($C_2B_9H_{11}$)$^-$	S, H, P, IR	[1129,1130]
3,1,2/2,1,12-(Ph_3P){-CH_2CH_2C[O(*n*-C_4H_9)}=O–]**Rh**($C_2B_9H_{11}$)	S, H, B, P	[1131]
2,1,7-(Ph_3P)[η^2-C(*m*-C_6H_4F)NOC(=O)]**Rh**($C_2B_9H_{11}$)$^-$	S, X, H, P, IR	[1129]
3,1,2-Cl_2(Ph_3P)**Rh**($RC_2B_9H_9$-8-SR′R″) R′, R″ = Me, Et, Ph	S, X(H, Me, Me), H, B, P, IR	[1090]
[3,1,2-(C_6H_6)(Ph_3P)**Rh**($C_2B_9H_{11}$)]$_2$	S, H, B, IR, UV	[827]
3,1,2-(Ph_3P)$_2$H**Rh**[(*n*-C_4H_9)$C_2B_9H_{10}$] hydrogenation catalyst	S, H, B, P, IR	[1132]
3,1,2-[μ-1,3-(CH_2=$CHCH_2CH_2$)](Ph_3P)H**Rh**($C_2B_9H_{10}$) hydrogenation catalyst	S, X, H, B, P, IR	[1132]
3,1,2-(Ph_3P)H**Rh**($C_2B_9H_9$)-9,12-Br_2	S, X	[1133]
3,1,2-(Ph_3P)$_2$H**Rh**[(μ-$CH_2C_6H_4CH_2$)$C_2B_9H_9$]	S, H, P, IR	[1107]
[1,2-μ-(3,4-CH_2CH_2CMe=$CHCH_2CH_2CH_2$)]-3,1,2-(Ph_3P)H**Rh**-($C_2B_9H_9$)	S, X	[1134]
μ-HC(C_6H_4Me)—3,1,2-(Ph_3P)(CO)**Rh**($Me_2C_2B_9H_9$)	S, H, B, C, IR	[1135]
μ-HC(C_6H_4Me)—3,1,2-(C_8H_{12})**Rh**($Me_2C_2B_9H_9$)	S, H, B, C, IR	[1135]
3,1,2-(S_2CH)(Ph_3P)**Rh**($C_2B_9H_{11}$)	X	[1136]
3,1,2-(Ph_3P)$_2$(HSO_4)**Rh**($C_2B_9H_{11}$)	S, B, P, IR	[1113]
3,1,2-(Ph_3P)[C(Ph)-C(Ph_3P)–CH–C(Ph)]**Rh**($C_2B_9H_{11}$)	S, X, H, P, IR	[1113]
[3,1,2-(Ph_3P)(μ-CN)**Rh**($C_2B_9H_{11}$)]$_4$	S, X, H, B, P, IR	[1113]
3,1,2-[CH_2CH_2C(O)OC_4H_9](Ph_3P)**Rh**($MeC_2B_9H_{10}$)	S, X, H, B, P	[1112]
3,1,2-[CH_2CH(Ph)C(O)OEt](Ph_3P)**Rh**($MeC_2B_9H_{10}$)	S, H, P	[1112]
3,1,2-[CH_2CH(Me)C(O)OMe](Ph_3P)**Rh**($MeC_2B_9H_{10}$) R = H, Me	S, H, P	[1112]
2,1,7-LL′Cl**Rh**($C_2B_9H_{11}$) L = Ph_3P; L′ = CO, C_5H_5N, MeCN, Ph_3P; LL′ = (Ph_2PCH_2)$_2$	S, B, P	[1112]
3,1,2-(Ph_3P)Me(CO_2)**Rh**($C_2B_9H_{11}$)	S, H, B, P, IR	[1137]
3,1,2-(Ph_3P)$_2$Me(CO_2)**Rh**($C_2B_9H_{11}$)	S, IR	[1137]
2,1,7/2,1,12-(Ph_3P)$_2$Me(CO_2)**Rh**($C_2B_9H_{11}$)	S, H, B, P	[1137]
2,1,7-(Ph_3P)[MeCHO(O)CMe]**Rh**($C_2B_9H_{11}$)	S, H, B, P, IR	[1137]
3,1,2-(Ph_3P)(C_3H_5)**Rh**($C_2B_9H_{11}$)	S, X	[1137]
3,1,2/2,1,7-L(Ph_3P)**Rh**($C_2B_9H_{11}$)$^-$ L = CO, C_2H_4	S, H, B, P, IR	[1138]
2,1,12-L(Ph_3P)**Rh**($C_2B_9H_{11}$)$^-$ L = CO, Ph_3P	S, H, B, P, IR	[1138]

Continued

Compound	Information	References
3,1,2-$Ph_2P(C_6H_5-)(Ph_3P)$**Rh**$(C_2B_9H_{11})$	X	
3,1,2/2,1,7-(Ph_3P)[MeC(O)Me]**Rh**$(C_2B_9H_{11})$	S, H, P	[1140]
3,1,2/2,1,7-(Ph_3P)(CO)[C(O)Me]**Rh**$(C_2B_9H_{11})$	S, H, P, IR	[1140]
Related derivatives		[1140]
3,1,2/2,1,7-$(Ph_3P)_2$Me**Rh**$(C_2B_9H_{11})$	S	[1140]
[18-crown-6]$^+$ 3,1,2-$(Ph_3P)(PhCH_2)$Br**Rh**$(C_2B_9H_{11})^-$	S, H, P	[1140]
3,1,2-$I_2(PPh_3)$**Rh**$(C_2B_9H_{10}$-4-$SMe_2)$	S, X, H, B, P, IR	[1141]
3,1,2-$(Ph_2PCH_2CH_2PPh_2)$Cl**Rh**$(C_2B_9H_{10}$-4-$SMe_2)^+$	S, X, H, B, P	[1077]
1,*n*-C_6H_4[3,1,2-H$(Ph_3P)_2$**Rh**$(C_2B_9H_{10}$-4-$CH_2)]_2$ $n=3,4$	S	[1142]
Exo-metallated Rh(C_2B_9) complexes		
$(CO)_2$CpW(μ-CC_6H_4Me)Au-2,1,7-(CO)(Ph_3P)**Rh**$(C_2B_9H_{11})$	S, H, C, P, IR	[1143]
$(CO)_2$CpW(μ-CC_6H_4Me)Au_2[3,1,2-$(CO)_2$**Rh**$(Me_2C_2B_9H_9)]_2$	S, X, H, C, IR	[1144]
μ-$Mn(CO)_4$-3,1,2-L(CO)**Rh**$(Me_2C_2B_9H_9)$ L=Ph_3P, CO	S, H, B, C, P, IR	[1092]
μ-$(Me_4C_4)(CO)_2$Co-3,1,2-(CO)(Ph_3P)**Rh**$(C_2B_9H_{11})$	S, X, H, B, C, P, IR	[1145]
3,1,2-[η^4-$(Me_3C)_2P_2$-$Co(CO)_2(C_4Me_4)$]]**Rh**$(C_2B_9H_{11})$	S, X, H, B, C, P, IR	[1146]
μ-$(Ph_3P)(CO)_2$(H)Ir-3,1,2-(Ph_3P)(CO)**Rh**$(C_2B_9H_{10})$	S, X, H, B, C, P, IR	[1145]
μ-$(Ph_3P)(CO)_2$Ir-3,1,2-(Ph_3P)(CO)**Rh**$(C_2B_9H_{10})^-$	S, H, B, C, P, IR	[1145]
$(Et_3P)_2$Pt(μ-H)(μ-CO)-3,1,2-(Ph_3P)**Rh**$(C_2B_9H_{11})$	S, X, H, B, C, P, Pt, IR, MS	[1147]
μ-LL′Pt—2,1,7-(Ph_3P)(CO)**Rh**$(C_2B_9H_{10})$ L=PEt_3, PPh_3, PMe_2Ph; L′=PEt_3, CO, PMe_2Ph	S, H, B, C, P, IR	[1148]
μ-(PhC═CPh)$(Et_3P)_2$Pt-2,1,7-(Ph_3P)(CO)**Rh**$(C_2B_9H_{10})$	S, H, B, C, P, IR	[1148]
Related 3,1,2- and 2,1,7-*exo*-metallated Pt derivatives		[1148]
3,1,2-(CO)(Ph_3P)**Rh**$(C_2B_9H_{10})$-μ(H)-3,7-$CuPPh_3$	S, H, B, P, IR	[1149]
(Ph_3P)Cu-3,1,2-(L)(CO)**Rh**$(Me_2C_2B_9H_9)$ L=CO, Ph_3P, Me_3P	S, H, B, C, P, IR	[1128]
3,1,2-[η^4-$(Me_3C)_2P_2$-Au(Ph_3P)]]**Rh**$(C_2B_9H_{11})$	S, X, H, B, C, P, IR	[1146]
$(Ph_3P)_2(Ph_3PAu)$-3,1,2-**Rh**$(C_2B_9H_{11})$	S, H, B, C, P	[1150]
$(Ph_3P)_2(Ph_3PAu)$-3,1,2-**Rh**$(Me_2C_2B_9H_9)$	S, H, B, C, P	[1150,1151]
(Ph_3P)(H)$(Ph_3PAu)_2$-3,1,2-**Rh**$(Me_2C_2B_9H_9)$	S, X, B, C, P	[1150,1151]
(Ph_3P)Au(CO)-2,1,7-(Ph_3P)**Rh**$(C_2B_9H_{11})$	S, H, C, P, IR	[1143]
$(CH_2)_n$[−Ph_2P–Au–(CO)-2,1,7–(Ph_3P)**Rh**$(C_2B_9H_{11})]_2$ $n=2$–6	S, H, C, P, IR	[1143]
Other (ligand)Rh(C_2B_9) complexes		
[3,1,2-X_2**Rh**$(Me_2S)C_2B_9H_{10}]_2$ X=Cl, Br, I	S, H, B	[1152]
3,1,2-$(CO)_2$**Rh**$(Me_2C_2B_9H_9)^-$	S, H, C, IR	[1144]
3,1,2-$(CO)_2$**Rh**$(PhC_2B_9H_9)$-7-SMe_2	S, X, H, B, IR	[1153]
3,1,2-$(CO)_2$**Rh**$(C_2B_9H_{11})$–NC_5H_5	S, H, B, IR, MS	[1154]
3,1,2-I_2(CO)**Rh**$(C_2B_9H_{10}$-4-$SMe_2)$	S, X, H, B, P, IR	[1141]
3,1,2/2,1,7-HB(pyrazolyl)$_3$**Rh**$(C_2B_9H_{11})$	S, X, H, B, IR, UV, MS	[1155]
3,1,2-(μ-Br)$_2$**Rh**$_2$[$C_2B_9H_{10}$-3-SC(NHPh)N(Ph)$CH_2]_2$	X	[1156]

Compound	Information	References
3,1,2-(MeCN)$(PPh_2Me)_2$**Rh**$(C_2B_9H_{11})^+$ SbF_6^-	S, X, H, B, IR	[1157]
3,1,2-L(SCHNPh)**Rh**$(C_2B_9H_{11})$ L = Ph_3P, Cl	S, H, B, IR	[1157]
3,1,2-[η^4-$(Me_3C)_2C_2P_2$]**Rh**$(C_2B_9H_{11})$	S, X, H, B, C, P, IR	[1146]
[2,1,8-(HO)**Rh**$(Ph_2C_2B_9H_9)]_4$	S, X, H, B, IR	[1088]
3,1,2-[X_2**Rh**$(C_2B_9H_{10}$-4-$SMe_2)]_2$ X = Cl, Br, I	S, H, B, P	[1077]
3,1,2-L(CO)**Rh**$(R_2C_2B_9H_8)$-4-CH_2R^- L = Ph_3P, CO; R = H, Me	S, H, B, C, P, IR	[1158]
3,1,2-Cp*__Rh__$(C_2B_9H_{11})$	S, E	[1500]
3,1,2-(Me_3C_3H)**Rh**$(R_2C_2B_9H_9)$ R = Me, $O(CH_2)_2C_6H_4$ isomers **Rh**···H π-allyl agostic CH_3···**Rh** bonding catalysis of alkene hydroformylation in supercritical CO_2	S, X, H(2d), B, C, IR	[1471]
3,1,2-Cp**Rh**$(C_2B_9H_{10}$-9-$SMe_2)^+$	S, H	[1483]
3,1,2-Cp**Rh**$(C_2B_9H_{10}$-9-SMe)	S, X, H, B	[1483]
3,1,2-$Br_2(Me_2S)$**Rh**$(Me_2C_2B_9H_8$-4-$SMe_2)$	S, X(Cl,Br), H, B	[1492]
3,1,2-(η^3-C_6H_{11})**Rh**$(MePhC_2B_9H_9)$ 2 diastereomers allyl	S, X, H, B, IR	[1498]
Bis(dicarbollyl) Rh complexes		
3,1,2-**Rh**$(C_2B_9H_{11})_2^-$	E	[1159]
3,1,2-$(C_2B_9H_{11})$**Rh**$(C_2B_9H_{10})$-4-SMe_2	S, H, B, P	[1077]
$(1,2\text{-}C_2B_9H_{11})$**Rh**$(Me_2C_2B_9H_8$-4-$SMe_2)$	S, H, B	[1492]
$(1,2\text{-}C_2B_9H_{11})Rh(Me_2C_2B_9H_8$-4-$SMe_2)$, {1,2,4,12-XRh[$(Me_3C$-NH)-$C_3B_8H_{10}]\}_2(\mu$-$I)_2$, 3,1,2-$(C_6H_6)LRh(C_2B_9H_{10}$-8-$SMe_2)^{2+}$, and 3,1,2-$(C_6H_6)LRh(R_2C_2B_9H_9)^+$ (R = H, Me) catalysts for oxidative coupling of benzoic acid with diphenylacetylene in the presence of copper(II) diacetate to form 1,2,3,4-tetraphenylnaphthalene		[1557]
Closo-RhC_3B_8 clusters		
1,2,4,12-(C_8H_{12})**Rh**[(12-$Me_3CNH)C_3B_8H_{10}$]	S, H, B	[693]
1,3′-**Rh**[2,4,12-$(Me_3C$-NH)$C_3B_8H_{10}$](1′,2′-$C_2B_9H_{11}$)	S, H, B	[1432]
Iridium		
Closo-IrC_2B_9 clusters		
Mono(dicarbollyl) Ir complexes		
*CpIr(C_2B_9) and Cp*Ir(C_2B_9) complexes*		
3,1,2-Cp*__Ir__$(C_2B_9H_{11})$	S, E	[1500]
2,1,7-(C_8H_{12})**Ir**[$(7\text{-}Me_2S)C_2B_9H_{10}$]	S, X, H, B	[1562]
3,1,2-Cp**Ir**$(C_2B_9H_{10}$-9-$SMe_2)^+$	S, H	[1483]
3,1,2-Cp**Ir**$(C_2B_9H_{10}$-9-SMe)	S, X, H, B	[1483]
Pseudocloso-3,1,2-X_2**Ir**$(Me_2C_2B_9H_8$-4-$SMe_2)$ X = Cl, Br, I	S, X, H, B	[1492]
3,1,2-$Br_2(Me_2S)$**Ir**$(Me_2C_2B_9H_8$-4-$SMe_2)$	S, H, B	[1492]
Other (hydrocarbon)Ir(C_2B_9) complexes		
3,1,2-L**Ir**$(C_2B_9H_{10}$-8-$SMe_2)^{2+}$ L = C_6H_6, C_6H_5OMe, $C_6H_3Me_3$, $C_6H_2Me_4$, C_6Me_6	S, B, E	[1079]
3,1,2-$(R''_2C_8H_{11})$**Ir**$(RR'C_2B_9H_9)$ R,R′ = *o*-$(CH_2)_2C_6H_4$, Me; R″ = H, Me	S, H	[1086]
3,1,2-[η^3-*endo*-1,5-*cyclo*-$Me_2C_8H_9$]**Ir**{[*o*-$C_6H_4(CH_2)_2$]$C_2B_9H_8$-8-R} R = H, OEt C—H···Ir	S, X, H(actual, var. T), B, C(actual), IR	[1161]

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Compound	Information	References
3,1,2-(η^3-C_8H_{13})**Ir**[*cyclo*-(C_8H_{12})$_2$$Ir_2$E]$C_2B_9H_8$-μ(Ir, B)-OMe E = S, Se	S, X(Se), H, B, IR	[1162]
3,1,2-(η^4-C_8H_{12})**Ir**($C_2B_9H_{10}$-9-SMe_2)	S, H, B	[1164]
	X	[1165]
3,1,2-LIr($C_2B_9H_{11}$)$^+$ L = C_6H_6, MeC_6H_5, 1,2/1,3-$Me_2C_6H_4$,1,2,4,5-$Me_4C_6H_2$, 1,3,5-$Me_3C_6H_3$, [2.2]paracyclophane catalysis of oxidative coupling of benzoic acid with PhC≡CPh (L = C_6H_6)	S, X($Me_4C_6H_2$), H, B	[1584]
3,1,2-$(MeCN)_3Ir(C_2B_9H_{11})^+$	S, X, H, B	[1584]
3,1,2-(RC_5H_4)Ir($C_2B_9H_{11}$) R = H, C(O)Me	S. H	[1584]
2,1,7-$(Ph_3P)_2$H**ir**($RC_2B_9H_{10}$) R = H, Ph	S, H, P	[835]
3,1,2-$(R_3P)_2$H**ir**($RC_2B_9H_{11}$) R = Ph, *p*-C_6H_4Me	S	[1167]
(Ph_3P)[η^2-C(*p*-C_6H_4Cl)NOC(═O)]—3,1,2-**Ir**($C_2B_9H_{11}$)$^-$	S, H, P, IR	[1129]
(1,2-$C_2B_9H_{10}$-4-SMe_2)**Rh**(H_4C_4B)-(C_6H_5)**Ir**(1,2-$C_2B_9H_{10}$-4-SMe_2)$^{2+}$	S, H, B	[1102]
Exo-metallated Ir(C_2B_9) complexes		
3,1,2-(CO)(Ph_3P)**Ir**($C_2B_9H_{10}$)-μ(H)-3,7-$CuPPh_3$	S, X, H, B, P, IR	[1149]
$(CO)_2$CpW(μ-CC_6H_4Me)Au_2[3,1,2-$(CO)_2$**Ir**($Me_2C_2B_9H_9$)]$_2$	S, H, B, C, IR	[1170]
(Ph_3PAu)(CO)—3,1,2-L**ir**($Me_2C_2B_9H_9$) L = PPh_3, CO	S, X(Ph_3P), H, B, C, P, IR	[1169]
$(Ph_3P)_4Au_4$(CO)Ir—3,1,2-$(CO)_2$**Ir**($Me_2C_2B_9H_8$)$^+$ ($Me_2C_2B_9H_9$)$^-$	S, H, B, C, P, IR	[1169]
Nickel		
Closo-NiCB$_{10}$ clusters		
2,1-$(RNC)_2$**Ni**[(RNC)$CB_{10}H_{10}$] R = CMe_3, xylyl	S, X(xylyl), H, B, C, IR	[1173]
2,1-(CO)**Ni**[(OEt_2)(Ph_2P-*o*-C_6H_4)$CB_{10}H_9$] **Ni**—P	S, X, H, B, C, IR	[1173]
2,1-**Ni**($Me_2HNCB_{10}H_{10}$)$_2$	S, UV	[593]
2,1-**Ni**[(C_3H_7NHR)$CB_{10}H_{10}$]$_2$ R = H, Me	S	[682]
2,1-**Ni**($RCB_{10}H_{10}$)$_2$ R = $PhCH_2NH_2$, HO	S, UV	[593]
2,1-(Me_3CNC)$_2$**Ni**($CB_{10}H_{11}$)$^-$	S, H, IR	[1176]
2,1-($NMe_2CB_{10}H_{10}$)**Ni**($Me_2NHCB_{10}H_{10}$)$^-$		[593]
Closo-NiPCB$_9$ clusters		
2,1,7-**Ni**(Me**P**CB_9H_{10})$_2$	S	[779]
2,1,7-(Ph_3P)Br**Ni**(Me**P**CB_9H_{10})	S	[1073]
2,1,7-$(Ph_3P)_2$**Ni**(Me**P**CB_9H_{10})	S	[1073]
Closo-NiC$_2$B$_9$ clusters		
*Other (hydrocarbon)**Ni**(C$_2$B$_9$) complexes*		
4,1,6-(η^3-C_3H_5)**Ni**($C_2B_9H_{11}$)$_2^-$	S, H, B, C	[1181]
2,1,7-(η^3-C_3H_5)**Ni**($C_2B_9H_9$)-2,6,11-Cu(PPh_3)-6,11-μ(H)$_2$	S, X, H, B, C, P	[1181]
2,1,7-(η^3-RC_3H_4)**Ni**($C_2B_9H_{11}$) R = H, Ph	S, H, B, C, IR	[1182]
2,1,7-[**Ni**($C_2B_9H_{11}$)]$_2$(η^4,η^4-C_8H_8)	S, X, H, B, C, IR	[1182]
3-Ni^{III}[1,2-$C_2B_9H_{10}$-8-C≡C—C_6H_4—C≡C—C_6H_4—BODIPY]-[1′,2′-$C_2B_9H_{10}$-8′-C≡C—C_6H_4—C≡C—C_6H_4–CH_2OC(O)–[NHC-(O)$OCMe_3$]—CH_2—tryptophan]$^-$	S, H, B, C, F, IR, MS, UV, fluorescence	[1591]

Compound	Information	References
3-Ni^{IV}[1,2-$C_2B_9H_{10}$-8-C≡C—C_6H_4—C≡C—$C_6H_4^-$ BODIPY]-[1′,2′-$C_2B_9H_{10}$-8′—C≡C—C_6H_4—C≡C—$C_6H_4^-$ $CH_2OC(O)$[NHC-(O)$OCMe_3$]—tryptophan]	S, H, B, C, F, IR, MS, UV, fluorescence	[1591]
(phosphino)Ni(C_2B_9) complexes		
2,1,7-$(Ph_3P)_2$**Ni**($Me_2C_2B_9H_9$)	S, IR	[1057]
3,1,2-(Ph_3P)H**Ni**($C_2B_9H_{10}$-8-PPh_3)	S, H, B, IR, MS	[1184,1185]
3,1,2-(Ph_3P)Cl**Ni**($C_2B_9H_{10}$-8-PPh_3)	S, B	[1184,1185]
3,1,2-[$Ph_2P(CH_2)_2PPh_2]_2$**Ni**($C_2B_9H_{11}$)	S, H, P	[1185]
3,1,2-[(*p*-$MeC_6H_4)_3P$]H**Ni**($C_2B_9H_{10}$-8-P(*p*-$MeC_6H_4)_3$	S, H, B, P	[1185]
3,1,2-$(Ph_3P)(C_5H_5N)$**Ni**($C_2B_9H_{11}$)	S, H, B, P	[1185]
3,1,2-L**Ni**[$(Me_2NCH_2)C_2B_9H_{10}$] N→**Ni** L=$(Ph_2P)_2(CH_2)_2$, *o*-phenanthroline]	S, X(*o*-phenanthroline), H, B, C, P, IR	[1187]
3,1,2/4,1,2-[$Ph_2P(CH_2)_2PPh_2$]**Ni**($Ph_2C_2B_9H_8$-6-Et)	S, X, H, B	[1188]
3,1,2-$(Ph_3P)_2$**Ni**[Me(*n*-C_5H_{11})$C_2B_9H_9$]	S, H, B, C, IR	[1189]
3,1,2-(Me_3CNC)I**Ni**[$(Ph_3PCH_2)C_2B_9H_{10}$] L=Et_3P, Me_3CNC	S, X, H, B, C, P, IR	[1187]
Other (ligandNi(C_2B_9) complexes		
2,1,7-L_2**Ni**($C_2B_9H_{11}$) L=CO, $CCMe_3$	S, H, B, C, IR	[1182]
(μ-CO)$(CO)_5Co_2$-3,1,2-**Ni**($Me_2C_2B_9H_9$)	S, H, B, C	[1191]
3,1,2/2,1,7-(bipyridyl)**Ni**($C_2B_9H_{11}$)	S, IR, MS	[1192–1194]
	H, B	[1194]
	X	[1195]
3,1,2-$(NC_5H_4)_2$**Ni**($C_2B_9H_{11}$)	S, H, C, IR, MS	[1196]
Neutral bis(dicarbollyl) Ni complexes		
3-**Ni**(1,2-$D_2C_2B_9H_9)_2$	S, IR, MS	[1199]
3-**Ni**(1,2-$C_2B_9H_{11})_2$·L L=naphthalene, pyrene, $PhNMe_2$	X	[1201]
3-**Ni**(1,2-$Me_2C_2B_9H_9)_2$	S, H, MS, UV, E	[1199]
3-**Ni**(1,2-$MeC_2B_9H_{10})_2$ dd/II and meso isomers	S, X, H(var. temp), B(var. temp), C	[1200]
3-**Ni**(1,2-$MeC_2B_9H_{10})_2^-$ $MeNC_5H_5^+$, NMe_4^+ salts dd/II and meso isomers	S, X, H(var. temp), B(var. temp), C	[1200]
2-**Ni**(1,7-$Me_2C_2B_9H_9)_2$	S, H, B, IR, MS, UV, E	[1199]
3-**Ni**[1,2-$(CH_2)_3C_2B_9H_9]_2$	S, H, IR, E	[968,1199]
3-**Ni**[(1,2-*m*/*p*-$FC_6H_4)C_2B_9H_{10}]_2$	F	[761]
3-**Ni**(1,2-$C_2B_9H_{10}$-8-$OMe)_2$	X	[1203]
(1,2-$C_2B_9H_{11}$)**Ni**(1,7-$C_2B_9H_{11}$)	S, E	[1199]
[1,2-$(CH_2)_3C_2B_9H_9$]**Ni**[1,7-$(CH_2)_3C_2B_9H_9$]	S, B, IR, MS, E	[968,1199]
2-**Ni**(1,7-$C_2B_9H_{10})_2$-μ(8,8′)-$N_2C_3H_3$	S, X(meso, dl), H, B, IR, MS, E	[775]
3,1,2-Ph_2B(pyrazolyl)$_2$**Ni**($C_2B_9H_{11})^-$	S, X, H, B, IR, UV, MS	[1155]
1,2-[$(Me_2S)C_2B_9H_{10}]_2$**Ni**$_2$$(C_5H_5)^+$ C_5H_5-bridged triple-decker sandwich	S, H, B	[806]

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Compound	Information	References
Anionic bis(dicarbollyl) Ni complexes		
3-**Ni**^{III}(1,2-$C_2B_9H_{11})_2^-$ ↔ **Ni**^{IV}(1,2-$C_2B_9H_{11})_2^0$ redox couple shuttle for dye-sensitized solar cells	E, UV	[1415]
X^+ 3-**Ni**(1,2-$C_2B_9H_{11})_2^-$ X = Ph_4P, H(phen), Cs, NMe_4	ESR: influence of temp and X	[1412]
3-**Ni**(1,2-$D_2C_2B_9H_9)_2^-$	S, IR	[1199]
2-**Ni**(1,7-$Me_2C_2B_9H_9)_2^-$	S, IR, UV, E, OR	[1199]
3-**Ni**[1,2-$(CH_2)_3C_2B_9H_9]_2^-$	S, IR, E	[968,1199]
[3-**Ni**(1,2-$C_2B_9H_{11})_2^-]_2$ Ni^{2+}·4L L = 2,2-bipyridine, pyridine	S, IR	[1194]
3-**Ni**(1,2-$C_2B_9H_{11})_2^-$ Na^+·2L L = 2,2-bipyridine	S, IR	[1194]
M^+ 3-**Ni**(1,2-$C_2B_9H_{11})_2^-$ M = Cs, Me_4N, Mn(*o*-phenanthroline)$_3$	S, X[Mn(*o*-phenanthroline)$_3$], ESR (variable temp)	[1209]
Cp*$_2$Fe$^+$ 3-**Ni**(1,2-$C_2B_9H_{11})_2^-$	S, IR, MS, MAG	[601]
(1,10-phenanthroline)$_3M^{2+}$ 3-**Ni**(1,2-$C_2B_9H_{11})_2^-]_2$ M = Mn, Ni, Cu	MAG (variable T)	[950]
3-[**Ni**^{II}(1,2-$C_2B_9H_{11})_2^{2-}]_2$ Ni^{4+}·4L L = 1,10-phenanthroline	S	[1210]
X^+ 3-**Ni**(1,2-$C_2B_9H_{11})_2^-$ X = Cs, Me_4N, Ph_4P, 0.5 Fe(phen)$_3$	S, IR, UV, MAG, Raman, XPS	[1212]
3-**Ni**[1,2-$(C_4H_4)C_2B_9H_9]_2^-$ benzodicarbollide complex	S, H, IR, UV	[687]
3-**Ni**[1,2-$(C_4H_4)C_2B_9H_9]_2$-μ(1,1′)-$(CH_2)_4^-$	S, X, H, B, C, IR	[598]
3-**Ni**$(C_2B_9H_{10}$-8-$Cl)_2^-$ extraction agent for Cs^+ and Sr^{2+}	S	[769]
(1,2-$Me_2C_2B_9H_9$)**Ni**(1,7-$Me_2C_2B_9H_9)^-$	S, IR, UV, E, OR	[1199]
3-**Ni**$(1,2\text{-}C_2B_9H_{10}$-10-$I)_2^-$	S, X, H, B, C, IR, MS	[1459]
$C(NHPh)_3^+$3-**Ni**(1,2-$C_2B_9H_{11})_2^-$ triphenylguanidinium	S, X	[1495]
3-**Ni**^{III}(1,2-$C_2B_9H_{11}$)(1′,2′-$C_2B_9H_{10}$-6′-$(CH_2)_5C_{16}H_9^-$ $C_{16}H_9$ = pyrene templates for electro- or photocontrolled molecular motors	S, H, B, C, MS, UV, fluorescence, E	[1541]
3-**Ni**^{IV}(1,2-$C_2B_9H_{11}$)(1′,2′-$C_2B_9H_{10}$-6′-$(CH_2)_5C_{16}H_9$ $C_{16}H_9$ = pyrene templates for electro- or photocontrolled molecular motors	S, H, B, C, MS, UV, fluorescence, E	[1541]
Palladium		
Closo-PdCB$_{10}$ clusters		
2,1-$(Me_3CNC)_2$**Pd**$(CB_{10}H_{11})^-$	S, H, IR	[1176]
2,1-$(Ph_2PCH_2)_2$**Pd**[$(Me_3N)CB_{10}H_{10}$]	S	[1176]
Mono(dicarbollyl) Pd complexes		
3,1,2-(C_4Ph_4)**Pd**$(C_2B_9H_{11})$	S, H, IR, UV	[618]
3,1,2-(η^4-C_8H_{12})**Pd**$(PhC_2B_9H_{10})$	S, H, B, IR	[1217]
3,1,2-(η^4-C_8H_{12})**Pd**$(Ph_2C_2B_9H_9)$	S, X, H, B, IR	[1217]
3,1,2-(η^4-C_8H_{12})**Pd**$(C_2B_9H_{10}$-4-$SMe_2)^+$	S, X, H, B, IR	[1091]
3,1,2-(η^2, σ-5-$OMeC_8H_{12}$)**Pd**$(C_2B_9H_{10}$-4-$SMe_2)$	S, X, H	[1091]
3,1,2-(η^4-C_8H_{12})**Pd**[$(C_4H_3S)C_2B_9H_{10}$]	S, X, H, B, C, P, MS	[1218]
3,1,2-(η^4-C_8H_{12})**Pd**[$(MeOCH_2)_2C_2B_9H_9$]	S, H, B(2d), IR	[545]
3,1,2-L_2**Pd**$(C_2B_9H_{11})$ L = 1,5-C_8H_{12}, Me_3CNC, NH_3, C_4Ph_4	S, B	[1219]
3,1,2-L_2**Pd**$(C_2B_9H_{11})$ L_2 = $(NMe_2)_2C_2H_4$, (Ph_2PCH_2); L = Me_3P, $(MeO)_3P$	S, B	[1219]

Compound	Information	References
3,1,2-(Me_3CNC)**Pd**($Me_2C_2B_9H_9$)	S, H, B, C, IR	[1180]
2,1,7-(Me_3CNC)**Pd**($Me_2C_2B_9H_9$)	S, H, B, IR	[1057]
3,1,2-[$C_2H_4(NMe_2)_2$]**Pd**($C_2B_9H_{11}$)	S, X	[1220]
3,1,2-($Me_2NCH_2CH_2NMe_2$)**Pd**($C_2B_9H_{11}$)	S, X, B	[1219]
3,1,2-(Ph_3P)(I)**Pd**($C_2B_9H_{10}$-4-SMe_2)	X	[1221]
3,1,2-($PhMe_2P$)Cl**Pd**($C_2B_9H_{10}$-4-SMe_2)	X	[1221]
3,1,2-(PMe_2Ph)$_2$**Pd**($C_2B_9H_{11}$)	S, H, B, P, IR	[1222]
3,1,2-(PMe_2Ph)$_2$**Pd**($C_2B_9H_9$)-4,5-$(CN)_2$	S, X, H, B, P, IR	[1222]
3,1,2-(PMe_2Ph)$_2$**Pd**($Me_2C_2B_9H_9$)	S, H, B, C, IR	[1180]
3,1,2-(PMe_2Ph)$_2$**Pd**[(C_4H_2RS)$C_2B_9H_9$-8-PMe_2Ph]$^+$ (C_4H_2RS)-$C_2B_9H_{11}^-$ R = H, Me	S, X(H), H, B, P, MS	[1223]
3,1,2-[$Ph_2P(CH_2)_2PPh_2$]**Pd**[(C_4H_3S)$C_2B_9H_{10}$]	S, X, H, B, P, MS	[1218]
3,1,2-[$Me_3C)_3P$]$_2$**Pd**{[μ-$S(CH_2)_3$]$C_2B_9H_{10}$}	S, H, B, P	[1224]
Bis(dicarbollyl) Pd complexes		
3-**Pd**(1,2-$C_2B_9H_{11})_2^-$·I	S, IR	[1199]
Platinum		
Closo-PtCB$_{10}$ clusters		
2,1-($Et_3P)_2$(PhHg)**Pt**($CB_{10}H_{11}$)	S, X, H, B, C, P	[1226]
2,1-($Et_3P)_2$(Ph_3PCu)**Pt**($CB_{10}H_{11}$)	S, X, H, B, C, P	[1226]
2,1-($Et_3P)_2$H**Pt**($CB_{10}H_{11}$)	S, X, H, B, C, P	[1226]
2,1-($Et_3P)_2$H**Pt**($CB_{10}H_{11}$)	S, X, H, B, C, P	[1226]
2,1-($Et_3P)_2$**Pt**[(Me_3N)$CB_{10}H_{10}$]	S, H, B, P, IR	[1176]
2,1-Cl($PMe_2Ph)_2$**Pt**($CB_{10}H_{11}$)	S, X, H, B, C, P	[1227]
[2,1-($PMe_2Ph)_2$**Pt**($CB_{10}H_{10}$)]$_2$	S, X, H, B, C, P	[1227]
2,1-(PhSe)(Et_3P)**Pt**($CB_{10}H_{10}$-*n*-SePh) *n* = 3, 7	S, X(*n* = 3), H, B, C, P	[1228]
2,1-(PhSe)(Et_3P)**Pt**($CB_{10}H_{10}$)-3-$O(CH_2)_4Cl$	S, X, H, B, C, P	[1228]
2,1-($Et_3P)_2$**Pt**($CB_{10}H_{10}$)-7-Te(Ph)CH_2Cl	S, X, H, B, C, P	[1228]
exo-(PhTe)(Et_3P)**Pt**(μ-PhTe)$_2$-7,1-(Et_3P)**Pt**($CB_{10}H_{11}$)	S, X, H, B, C, P	[1228]
Closo-PtC$_2$B$_9$ clusters		
3,1,2-(η^4-C_8H_{12})**Pt**($PhC_2B_9H_{10}$)	S, H, B, IR	[1217]
3,1,11-(η^4-C_8H_{12})**Pt**($Ph_2C_2B_9H_9$)	S, H, B, IR	[1217]
3,1,2-(η^4-C_8H_{12})**Pt**[(C_4H_3S)$C_2B_9H_{10}$]	S, X, H, B, C, P, MS	[1218]
3,1,2-($R_3P)_2$**Pt**($PhC_2B_9H_{10}$) R = Me, Ph	S, IR, H, E	[1229]
3,1,2-[(n-$C_3H_7)_3P$]$_2$**Pt**($PhC_2B_9H_{10}$)	S, IR, H, E	[1229]
3,1,2-($Et_3P)_2$**Pt**($Me_2C_2B_9H_9$)	S, X	[1215]
3,1,2-($Ph_3P)_2$**Pt**($C_2B_9H_{11}$)	S, B	[1231]
3,1,11-($Me_2PhP)_2$**Pt**($PhC_2B_9H_9$-11-R) R = H, Ph	S, X, P	[1232]
2,1,7-($PR_3)_2$**Pt**($Ph_2C_2B_9H_8$-7-OEt) R_3 = Me_2Ph, Et_3	S, H, B, P	[1234]
2,1,7-($PhMe_2P)_2$**Pt**($Me_2C_2B_9H_9$)	S, X	[1215,1235]
2,1,7-L_2**Pt**($Me_2C_2B_9H_9$) L = PMe_2Ph, PEt_3, PMe_3	S, H, IR	[1057]
3,1,2-L_2**Pt**($PhMeC_2B_9H_9$) L = PMe_2Ph, PEt_3, PPh_3, $P(C_6H_4Me)_3$	S, X(PEt_3, PPh_3), H, B, IR	[1236]

Continued

Compound	Information	References
3,1,2/2,1,8-$(PMe_2Ph)_2$**Pt**$(C_2B_9H_{11})$	S, H, B, P	[1237]
	H(variable temp), P	[1238]
2,1,8-$(PMe_2Ph)_2$**Pt**$(Ph_2C_2B_9H_8)$-4-Et	S, X, H, B, P, IR	[1239]
2,1,8-$(PMe_2Ph)_2$**Pt**$(Ph_2C_2B_9H_8)$-4-F	S, X, H, B, F, P, IR	[1239]
3,1,2-[CH–CPh–CH–CPh]$\mathbf{Pt}_2(Me_2C_2B_9H_9)$	S, X, H, B, C	[1191]
2,1,8-$(Ph_2PCH_2CH_2PPh_2)$**Pt**$(Ph_2C_2B_9H_8$-*n*-I) $n=7$, 10, 12	S, X, H, B, P, IR	[1186]
3,1,2-$(Ph_2PCH_2)_2$**Pt**$(C_2B_9H_{11})$	S, B	[1219,1240]
	X	[1240]
3,1,2-$(Me_2PhP)_2$**Pt**$[(C_4H_3S)C_2B_9H_{10}]$	S, X, H, B, P, MS	[1218]
Closo-CuC$_2$B$_9$ clusters		
3,1,2-(Ph_3P)**Cu**$(C_2B_9H_{10})$-NC_5H_5	S, H, B	[1246]
3,1,2-(Ph_3P)**Cu**$(C_2B_9H_{10})$-4-$NC_5H_4CO(O)Me$	S, X, H, B, P, IR	[1245]
3,1,2-(Ph_3P)**Cu**$(C_2B_9H_9)$-*exo*-4,8-$(\mu\text{-}H)_2Cu(PPh_3)$	S, X, H, B, P, IR	[1245]
3,1,2-(Ph_3P)**Cu**$(Ph_2C_2B_9H_9)$-μ_3-B(8,9,12)-$Cu(PPh_3)$	S, X, H, B, P	[1247]
3,1,2-(Ph_3P)**Cu**$(C_2B_9H_{10})$-4-SMe_2	S, X, H, B	[1248]
nido-3-[(*o*-toluyl)$_3$P]**Cu**(1,2-$Ph_2C_2B_9H_9$)-μ_3-B(8,9,12)-Cu[P(*o*-toluyl)$_3$]	S, X, H	[1247]
Gold[c]		
Nido-AuC$_2$B$_9$ clusters		
3,1,2-(Ph_3P)**Au**$(C_2B_9H_{10}$-$NC_5H_5)$	S, B, IR	[1246]
3,1,2-(Et_2NCS_2)**Au**$(C_2B_9H_{11})$	S, X, H, B, IR, MS	[1231,1250]
10,7,8-$(\mu\text{-}PtL_2R)(\mu\text{-}H)(Ph_3P)$**Au**$(R'_2C_2B_9H_8)$ L = PEt_3, PMe_2Ph; R = H, Me; R′ = H, Me	S, X(H, Me, PEt_3), B, C, P	[1253]
Theoretical Studies		
Molecular and electronic structure calculations		
3-**Cr**$(1,2\text{-}C_2B_9H_{11})_2^-$	MNDO	[30]
3,1,2-RHC═C═$(PH_3)_2$**Mn**$(C_2B_9H_{11})$	DFT: better electron reservoir than Cp^- analogue	[1256]
Cp**M**$(C_2B_9H_{11})$ **M = Mn, Re**	DFT, ab initio, stable isomers	[1394]
3,1,2-$(CO)_3$**Re**$(C_2B_9H_{11})^q$ $q=0, -1$; 3,1,2-$(CO)_3$I**Re**$(C_2B_9H_{11})$; 3,1,2-$(CO)_3$I**Re**$(C_2B_9H_{10}$-I$)^-$	DFT: effect of *iodo*-substitution on bond lengths and hyperpolarizability; redox switchable 2nd order NLO	[1487]
3,1,2-$(CO)_3$**Re**$(C_2B_9H_{11})^-$	DFT	[706]
3,1,2-$(CO)_2(NO)$**Re**$(C_2B_9H_{11})$	DFT	[713]
1,2,*n*-Cp**Fe**$(C_2B_9H_{11})^-$ $n=3,4,8,9,12$	Stability; *o*, *m*, *p*-directing influence; DFT	[1257]
1,7,8,12-Cp**Fe**$(C_3B_8H_{11})$	Stability; *o*, *m*, *p*-directing influence; DFT	[1257]
1,2,3,4/1,2,3,5/1,2,3,6/1,2,4,5/1,2,4,10-Cp**Fe**(**P**$C_2B_8H_{10}$)	Stability; *o*, *m*, *p*-directing influence; DFT	[1257]
	D-D transitions	[764]
	DFT(^{11}B), orbital analysis	[1408]
$(TMTSF)^+$ 3-**Fe**$(1,2\text{-}C_2B_9H_{11})_2^-$ TMTSF = tetramethyltetraselenafulvalenium	S, X, COND	[936]
3-**Fe**$(1,2\text{-}RC_2B_9H_{10})_2^-$ R = H, Me, Ph	Effective magnetic moments	[1262]

Compound	Information	References
3,1,2-Cp**Fe**$C_2B_9H_{11}$)	Effective magnetic moments	[1262]
	Electron transfer	[1263]
3,1,2-(1′,3′,5′-$C_6H_3Me_3$)**Fe**($C_2B_9H_{11}$)	DFT, GIAO (^{11}B)	[1259]
1,2,3,*n*-Cp**Fe**($C_3B_8H_{11}$) *n*=4,5	DFT	[785]
1,2,4,12-Cp**Fe**[(12-Me_3CNH)$C_3B_8H_{10}$]	DFT	[423]
3,1,2-**Fe**($C_2B_9H_{10}$-8-SMe_2]$_2$	Dicarbollide rotational energy	[772]
3,1,2-(C_6H_6)**Fe**($C_2B_9H_{10}$-4-SMe_2)$^+$	DFT: Fe bonding	[1530]
1,2,4,12-(C_6H_6)**Fe**{[12-(Me_3C)HN]$C_3B_8H_{10}$}	DFT: Fe bonding	[1530]
3,1,2-**Ru**($C_2B_9H_{10}$-8-SMe_2]$_2$	Dicarbollide rotational energy	[772]
3,1,2-(MeC≡CPh)$(CO)_2$**Ru**($Me_2C_2B_9H_9$)	ZINDO	[831]
1,2,4,12-Cp*[12-Me_3CNH)$C_3B_8H_{10}$]	DFT	[423]
3,1,2-(η^6-C_6H_6)**Ru**($RC_2B_9H_8$-8-SMe_2)$^+$	Antipodal effects	[819]
3,1,2-(η^6-C_6H_6)**Ru**($RC_2B_9H_8$-8-SMe)	Antipodal effects	[819]
3,1,2-(η^6-C_6H_6)**Ru**($C_2B_9H_{10}$-8-SH) C—H···S—H···H—B interactions; 2-D polymeric network	DFT	[814]
3,1,2-[$Ph_2P(CH_2)_nPPh_2$]Cl**Ru**($C_2B_9H_{11}$) *n*=2,5 influence of phosphino ligands on reactivity	DFT: energies, geometry	[1532]
3,1,2-[$Ph_2P(CH_2)_nPPhC_6H_4$]Cl**Ru**($C_2B_9H_{11}$) *n*=2,5 C_6H_4—B influence of phosphino ligands on reactivity	DFT: energies, geometry	[1532]
3,1,2-[$Ph_2P(CH_2)_nP(C_6H_4)_2$]Cl**Ru**($C_2B_9H_{11}$) *n*=2,5 2 C_6H_4—B influence of phosphino ligands on reactivity	DFT: energies, geometry	[1532]
3-**Co**(1,2-$C_2B_9H_{10}$)$_2$-μ(1,1′)-$SiMe_2^-$	DFT	[978]
3-**Co**(1,2-$C_2B_9H_{10}$)$_2$-μ(1,1′)-$SiMeH^-$	DFT	[978]
3-**Co**(1,2-$C_2B_9H_9$)$_2$-μ(1,1′)-SiMeR-μ(8,8′)-$C_6H_4^-$	DFT	[978]
(1,2-$C_2B_9H_{10}$)**Co**[1,2-(Me_3Si)$C_2B_9H_9$]-μ(8,8′)-$C_6H_4^-$	DFT	[978]
3-**Co**[1,2-(Me_3Si)$C_2B_9H_{10}$]$_2^-$	DFT	[978]
3-(1,2-$C_2B_9H_{11}$)**Co**(1,2-$C_2B_9H_{10}$-8-R)$^-$ (R=I, Me, Et, Ph, C_6H_4Ph, C_6H_4-4-*n*-C_4H_9, CH_2CH_2Ph)	Ab initio	[1015]
3-**Co**(1,2-$C_2B_9H_8$-9,12-I_2)$_2^-$ R=Me, Ph air-stable redox couple	DFT: redox potentials)	[1573]
3-**Co**(1,2-$C_2B_9H_8$-4,9,12-I_3)$_2^-$ air-stable redox couple	DFT: redox potentials)	[1573]
3-**Co**(1,2-$C_2B_9H_7$-8,9,10,12-Me_4)$_2^-$ air-stable redox couple	DFT: redox potentials)	[1573]
3-**Co**(1,2-$C_2B_9H_7$-8,9,10,12-I_4)$_2^-$ air-stable redox couple	DFT: redox potentials)	[1573]
3-**Co**(1,2-$C_2B_9H_{11}$)[(Me_2HSi)$C_2B_9H_{10}$]$^-$	DFT: Si—H···H—C bonding; loss of H_2 and formation of 3-**Co**(1,2-$C_2B_9H_{10}$)$_2$-u(1,1′)-$SiMe_2^-$	[1268]
3,1,2-(η^5-indenyl)**Co**($C_2B_9H_{11}$)	Extended Hückel, ligand conformation	[867]
3,1,2-(NC_4H_4)**Co**[(MeS)$_2C_2B_9H_9$]	Effect of electron density transfer on carborane C–C distance	[903]
3,1,2-**Co**($C_2B_9H_{10}$-8-SMe_2]$_2^+$	Dicarbollide rotational energy	[772]
3,1,2-Cp**Co**($C_2B_9H_{10}$-8-SH) C–H···S–H···H–B interactions; 2-D polymeric network	DFT	[814]
Cp_2**Co**$_2$($Me_4C_4B_6H_6$)	Polyhedral cage distortion	[1269]
Cs^+ 3-**Co**(1,2-$C_2B_9H_{11}$)$_2^-$ Cs^+ interactions with calix[4]arene-bis(*t*-octylbenzo)-18-crown-6	DFT	[1446]

Continued

Compound	Information	References
3-**Co**(1,2-($C_2B_9H_{11}$)(1,2-$C_2B_9H_{10}$-8-I)$^-$ Pd-catalyzed B–C_{vinyl} coupling	DFT: reaction profile	[1448]
3-**Co**(1,2-($C_2B_9H_{10}$)(1′,2′-R′$C_2B_9H_{10}$)$^-$ R, R′=H, NH_2, NO_2, Me, OMe, Ph, Cl nonlinear optical properties	DFT: β_{tot} (first-order hyperpolarizability), dipole moment, UV	[1575]
3,1,2-(η^4-C_8H_{12})**Rh**($C_2B_9H_{10}$-4-SMe_2)	Extended Hückel, charge distribution	[1091]
3-**Co**[1,2-(H_2NCH_2)$R_2C_2B_9H_{10}$](1′,2′-$C_2B_9H_{11}$)$^-$	DFT: geometry; GIAO, ^{11}B shifts	[1564]
Pseudocloso-3,1,2-Cp*__Rh__[($PhCH_2$)$_2C_2B_9H_9$]	DFT, solid state	[1093]
Pseudocloso-3,1,2-(η^3-C_8H_{13})**Rh**[(MeC_6H_4)$_2C_2B_9H_9$]	DFT, solid state	[1093]
1,2,4,12-(C_8H_{12})**Ir**{[12-(Me_3C)HN]$C_3B_8H_{10}$}	DFT: Fe bonding	[1529]
3-**Ni**(1,2-$C_2B_9H_{11}$)$_2$·L L=naphthalene, pyrene, $PhNMe_2$	Ligand orientation, charge transfer	[1201]
3-**Ni**(1,2-$R_2C_2B_9H_9$)$_2$ R=H, Me	DFT: HOMO/LUMO vertical electronic excitation	[1202]
3-**Ni**(1,2-$C_2B_9H_{10}$-8-SMe_2]$_2$	Dicarbollide rotational energy	[772]
3-**Ni**^{III}(1,2-$C_2B_9H_{10}$-6-$(CH_2)_nC_{16}H_9$$^-$ *n*=3,5,7	DFT: conformer energies	[1541]
3-**Ni**^{IV}(1,2-$C_2B_9H_{10}$-6-$(CH_2)_nC_{16}H_9$ *n*=3,5,7 $C_{16}H_9$=pyrene	DFT: conformer energies	[1541]
3-**Ni**^{III}(1,2-$C_2B_9H_{11}$)(1′,2′-$C_2B_9H_{10}$-6′-$(CH_2)_5C_{16}H_9$$^-$ $C_{16}H_9$=pyrene	DFT: conformer energies	[1541]
3-**Ni**^{IV}(1,2-$C_2B_9H_{11}$)(1′,2′-$C_2B_9H_{10}$-6′-$(CH_2)_5C_{16}H_9$ $C_{16}H_9$=pyrene	DFT: conformer energies	[1541]
2,1-(Me_3CNC)$_2$**Pd**[(Me_3N)$CB_{10}H_{10}$]	CB_{10} ligand slip-distortion	[1215]
3,1,2-(η^4-C_8H_{12})**Pd**($C_2B_9H_{10}$-4-SMe_2)$^+$	Extended Hückel, charge distribution	[1091]
2,1-(PH_3)$_2$**Pt**($CB_{10}H_{11}$)$^-$	Extended Hückel, d orbital contributions	[1272]
2,1-(PhSe)(Et_3P)**Pt**($CB_{10}H_{10}$-*n*-SePh) *n*=3, 7	Extended Hückel	[1228]
Other Calculations		
3,1,2-(η^6-C_6H_6)**Fe**($C_2B_9H_0$-4-L$^+$ R=H, Me; L=SMe_2, NMe_3	DFT, redox potentials	[743]
3,1,2-(η^5-C_6H_7)**Fe**($C_2B_9H_8$-4-L R=H, Me; L=SMe_2, NMe_3	DFT, redox potentials	[743]
3,1,2-L$_3$**Fe**($C_2B_9H_{10}$-4-SMe_2)$^+$ L=Me_3CNC, $P(OMe_3)_3$	DFT, redox potentials	[743]
3-**Fe**(1,2-$C_2B_9H_{10}$-4-SMe_2)$_2$	DFT, redox potentials	[743]
3-**Fe**(1,2-$C_2B_9H_{10}$-4-SMe_2)(1,2-$C_2B_9H_{10}$-4-NMe_2)	DFT, redox potentials	[743]
($C_2B_9H_{11}$)**Co**($C_2B_8H_{10}$)**Co**($C_2B_9H_{11}$)$^{n-}$	Magnetic properties of *nido*-$C_2B_9H_{11}^{2-}$ and *arachno*-$C_2B_8H_{10}^{4-}$ ligands	[1048]
3-**Co**(1,2-$C_2B_9H_8Cl_3$)$_2$$^-$ separation of Am and Pu from products of irradiated Be		[1567]
3-**Co**(1,2-$C_2B_9H_8Cl_3$)$_2$$^-$ solvent system with nitrophenyloctyl ether for extraction of radioactive Cs from acidic wastes	Diffusion coefficient	[1544]
3-**Co**(1,2-$C_2B_9H_9$)$_2$-1.1′-P(E)X-8,8′-$C_6H_4$$^-$ X=$PCMe_3$, PPh, P(E)Ph; E=O, S, Se diansa-metallacyclophanes	^{11}B, NMR ^{31}P NMR	[1456]
3-**Co**(1,2-$C_2B_9H_{11}$)(1,2-$RC_2B_9H_{10}$)$^-$ R=C(O)OH, $CH_2C(O)OH$, $(CH_2)_2C(O)OH$, $OCH_2C(O)OH$	DFT: ^{11}B shifts, geometry	[1528]
3,1,2-(C_6H_6)Ir($C_2B_9H_{11}$)$^+$	DFT, Ir-catalyzed decarboxylation of benzoic acid	[1584]

[a] *Transition metals and other heteroatoms (other than carbon) incorporated into the cluster framework are in* ***boldface****.*
[b] *S, synthesis; X, X-ray diffraction; H, ^{1}H NMR; B, ^{11}B NMR; C, ^{13}C NMR; F, ^{19}F NMR; P, ^{31}P NMR; Li, ^{7}Li NMR; Pt, ^{195}Pt NMR; Si, ^{29}Si NMR; 2d, two-dimensional (COSY) NMR; IR, infrared data; MS, mass spectroscopic data; UV, UV-visible data; E, electrochemical data; CD, circular dichroism; ESR, electron spin resonance data; NLO, nonlinear optical data; COND, electrical conductivity; MAG, magnetic susceptibility; NQR, nuclear quadrupole resonance; OR, optical rotation; XPS, X-ray photoelectron spectra,TGA, thermogravimetric analysis; DSC, differential scanning calorimetry.*
[c] *For complexes containing* exo*-polyhedral metal-ligand groups bound to* nido*-C_2B_9 clusters, see Tables 7-2 and 7-3.*