Appendix B

Supplemental Data for Table 7-2. Selected *nido*-7,8-$C_2B_9H_{13}$, *nido*-7,8-$C_2B_9H_{12}^{2-}$, and *nido*-7,8-$C_2B_9H_{11}^{2-}$ Derivatives

Compound	Information[a]	References
Single-Cage Derivatives of *nido*-7,8-$C_2B_9H_{13}$, *nido*-7,8-$C_2B_9H_{12}^{-}$, and *nido*-7,8-$C_2B_9H_{11}^{2-}$		
Neutral single-cage derivatives, no substituents on boron		
$RC_2B_9H_{12}$ R = Me, Ph	S, IR	[45]
$[(Me_2CH)_2IP]PhC_2B_9H_{10}$	S, X, H, B, C	[297]
$[PR_2(O)]R'C_2B_9H_{11}$ R = Et, $CHMe_2$, Ph; R′ = H, Me, Ph	S, X (R, R′ = Ph), H, B, C, P, IR	[67]
$(C_5H_4NMe)PhC_2B_9H_{10}$	S	[105]
$(C_6H_3R_2\text{-NH{=}CH})C_2B_9H_{11}$ R = $CHMe_2$, Me	S, X($CHMe_2$), H, B, C, IR, MS	[103]
$[H_3N(CH_2)_3]C_2B_9H_{11}\cdot N_2H_4$	S, X, H, B	[129]
$(H_5C_5NCH_2)C_2B_9H_{11}$	S, X, H, B	[125]
$(Me_2NCH_2)(HMe_2NCH_2)C_2B_9H_{10}$	S, X, H, B, C, IR	[300]
μ-Me_2M-$(Me_2NCH_2)C_2B_9H_{10}$ M = Al, Ga	S, X(Al), H, B, C, IR	[300]
μ-Me_2M-$(Me_2NCH_2)(Ph_2P)C_2B_9H_{10}$ M = Al, Ga	S, X, H, B, C, IR	[300]
$(HRN{-}C{-}NRH)C_2B_9H_{12}$ R = 2′,6′-$(CHMe_2)C_6H_3$ amidinate	S, X, H, B, IR, MS	[649]
[*cyclo*-$C(=NH_2)CBrC(=NH_2)^+$]$C_2B_9H_{11}^-$ iminium salt	S, X, H, B, C, IR, MS	[665]
$(Ph_3PCH_2)C_2B_9H_{11}$	S, X, H, B, C, P, MS, cytotoxicity	[584]
$(MePh_2P)C_2B_9H_{10}$ selective targeting of mitochondria for BNCT	S, H, B, C, P, MS.	[301]
$(Me_2S)C_2B_9H_{11}$	S, X	[653]
$(MeS)_2C_2B_9H_9$-10-SMe_2	S, X, H, B, C	[657]
$(MeS)C_2B_9H_{10}$-10-SMe_2	S, X, H, B, C	[657]
(*cyclo*-$Ph_2P{=}S$-RhCp*S)$C_2B_9H_{10}$	S, X, H, B, C, P, IR	[598]
[*cyclo*-$PPh_2Au_2(C_6F_5)(PR_3)PPh_2$]$C_2B_9H_{10}$ PR_3 = PPh_3, PPh_2Me, PPh_2(*p*-C_6H_4Me), P(*p*-$C_6H_4Me)_3$ luminescence	S, X(PPh_2Me, PPh_3), H, P, F, IR, UV (emission, diffuse reflectance)	[599]
$(R_2R'_2C_{12}N_2)Cu^+(\mu\text{-}PPh_2)_2C_2B_9H_{10}^-$ *o*-phenanthroline R = H, Me; R′ = H, Ph catalyst for photoinduced cross-dehydrogenative C-H coupling	S, X(R = Me, R′ = H), H, C, P, IR, MS, EPR	[651]

Compound	Information	References
$H_{10}B_{10}C_2(\mu\text{-}S)_2M(\text{—}M'PPh_3)$-7,8-($\mu$-$PPh_2)_2$-7,8-*nido*-$C_2B_9H_{10}$ M = Pd, Pt, Ni; M′ = Cu, Ag, Au heterobimetallic d^8-d^{10} interactions	S, X(Pd, Au; Pt, Au; Pd, Ag; Pd), H, P, MS, diffuse reflectance UV, emission	[638]
Me-$CB_{10}H_{10}C$-PPh_2-M[*nido*-7,8-(μ-$PPh_2)_2C_2B_9H_{10}$] M = Ag, Au	S, X(Ag), H, P, IR, UV (luminescence emission)	[639]
cyclo-[R_2P-Ag($N_2C_{11}OH_6$)-PR_2]$C_2B_9H_{11}$ diazafluorene-9-one	S, H, P, luminescence emission/excitation	[641]
Neutral single-cage derivatives, D or hydrocarbon substituents on boron		
$C_2B_9H_{(13-n)}D_n$	S, B	[143]
$Me_2C_2B_9Me_6H_5$	S, H, B, C	[92]
Neutral single-cage derivatives, N-containing substituents on boron		
[HO(O)CCH_2]$C_2B_9H_{10}$-3-NH_3	S	[307]
$C_2B_9H_{11}$-9-NC_5H_5-10-X (X = H, Cl)	S, IR	[308]
$R_2C_2B_9H_{10}$-9-NC_5H_5 R = H, Me	S, B, H, IR	[175]
$C_2B_9H_{11}$-*n*-NC_5H_5 *n* = 9,10	H	[176]
$Me_2C_2B_9H_9$-*n*-NC_5H_5 *n* = 9,10	S, H	[176]
$C_2B_9H_{11}$-3-(NC_5H_5-3-Br)	S, B	[143]
$R_2C_2B_9H_9$-9-L R = H, Me; L = NMe_3, pyridyl	S, X(H, pyridyl), H, B	[133]
$RC_2B_9H_{11}$-9-NC_5H_5 R = Me, Ph, $CH_2NC_5H_5$	S, IR, UV	[308]
$C_2B_9H_{10}$-9-Me-11-NC_5H_5	S, B, H, MS	[181]
$C_2B_9H_9$-9-NMe_3-6,11-Br_2	S, X, H, B(2d)	[581]
$C_2B_9H_8$-9-NMe_3-1,6,11-Br_3	S, X, H, B(2d)	[581]
$C_2B_9H_{12}$-L L = terpyridine, terpyridine-O$(CH_2)_3$	S, MS	[310]
Me[CH_2-*cyclo*-NH$(CH_2)_5$]$C_2B_9H_{10}$		[311]
$Me_2C_2B_9H_{10}$-B-CH_2-*cyclo*-NR$(CH_2)_5$ R = H, Me		[311]
$BrC_2B_9H_{10}$-10-BH$(NC_5H_5)_2$ intermediate in deboronation of *closo*-1,2-$BrC_2B_{10}H_{11}$ by pyridine	S, X, H, B	[93]
$C_2B_9H_{11}$-9-SCMe=NHCMe_2	S, X, H, B, C, MS	[637]
$C_2B_9H_{11}$-10-SCMe=NMe_2	S, X, H, B, C, MS	[637]
$C_2B_9H_{11}$-*n*-OCMe=NHCHPh_2 *n* = 9,10	S, X(*n* = 9), H, B, C, MS	[637]
$C_2B_9H_{11}$-*cyclo*-9,4-N$Me_2(CH_2)_3$O	S, X, H, B(2d), C	[632]
$C_2B_9H_{11}$-9-SCMe=NHCMe_2	S, X, H, B, C, MS	[637]
$C_2B_9H_{11}$-10-SCMe=NMe_2	S, X, H, B, C, MS	[637]
$C_2B_9H_{11}$-*n*-OCMe=NHCHPh_2 *n* = 9,10	S, X(*n* = 9), H, B, C, MS	[637]
Neutral single-cage derivatives, P-containing substituents on boron		
$C_2B_9H_{11}$-10-O$(CH_2)_2$O$(CH_2)_2$PPh_3	S, H, B, C, MS	[661]
μ(7,8)-S$(CH_2)_3$-$C_2B_9H_{10}$-11-R R = PPh_3, PMePh_2	S, X (PPh_3), H, B, P(PPh_3)	[189]
$C_2B_9H_{11}$-*n*-PPh_3-*m*-I *n*,*m* = 6,5; 11,9; 9,6	S, X(*n*,*m* = 11,9; 9,6), B, C, P, MS	[654]
$C_2B_9H_{11}$-*n*,*m*-$(PPh_3)_2$ *n*,*m* = 5,6; 9,11	S, X(5,6), B, C, P, MS	[654]
$C_2B_9H_{11}$-5-I-6,9-$(PPh_3)_2$	S, X B, C, P, MS	[654]
Neutral single-cage derivatives, O-containing substituents on boron		
$C_2B_9H_{11}$-10-OC_4H_8	S, H	[176]
$C_2B_9H_{11}$-10-OC_4H_8 adduct with lysozyme solid state protein modification via cyclic ether ring opening	Circular dichroism, enzymatic activity	[652]

Continued

Compound	Information	References
$Me_2C_2B_9H_9$-10-OC_4H_8	S, H	[176]
$(PhCH_2)_2C_2B_9H_9$-OC_4H_8	S, X, H, B, C, IR	[174]
$C_2B_9H_{11}$-10-$O(CH_2CH_2)_2O$	S, H, B, C	[187]
$C_2B_9H_{11}$-10-$O(CH_2)_2O(CH_2)_2SMe_2$	S, H, B, C, MS	[661]
Neutral single-cage derivatives, S-containing substituents on boron		
$C_2B_9H_{11}$-9-SMe_2	S, H, B	[133]
	S, B(2d)	[181]
	S, B, H, MS	[177]
$C_2B_9H_{10}$-9-SMe_2-6-Br	S, H, B(2d)	[314]
$C_2B_9H_9$-9-SMe_2-6,11-Br_2	S, X, H, B(2d)	[314]
$C_2B_9H_{11}$-10-SMe_2	S, X, H, B, C	[127]
$C_2B_9H_{11}$-10-L L = SMe_2, $MSEt_2$,$(CH_2)_4S$, $OR(CH_2CH_2)_2S$, $OREt_2$, $(CH_2)_4O$, $OR(CH_2)_2O$	S, B, H	[181]
$C_2B_9H_{11}$-*n*-SMe_2 *n* = 9,10	S, B, IR, MS	[199]
$C_2B_9H_{10}$-9-SMe_2-5,6-Br_2	S, H, B(2d), MS	[315]
$C_2B_9H_{11}$-5-$S(O)Me_2$	Raman	[309]
$Me_2C_2B_9H_9$-9-SMe_2	S, B, H, IR	[175]
	S, H, B	[133]
$Me_2C_2B_9H_9$-10-L L = SEtPh, SMe_2, SEt_3, $S(CH_2)_4$	S, H, B, C	[127]
$C_2B_9H_{11}$-10-$O(CH_2)_2O(CH_2)_2SMe_2$	S, H, B, C, MS	[661]
$C_2B_9H_{11}$-9-$C(SMe)NH_2$	S, X, H, B, C, IR, MS	[627]
Neutral single-cage derivatives, main group metal substituents on boron		
$Me_2C_2B_9H_{11}$-μ(9,10)-$AlEt_2H_2$	S, H, B, C, Al	[47]
$C_2B_9H_{12}$-μ(9,10)-$GaEt_2$	S, B, H, IR, MS	[193]
$(C_2B_{10}H_{11})Sn(C_2B_9H_{11})$	IR, Raman	[322]
Neutral multi-cage derivatives		
μ(9,10)-$(C_5H_5N)_2Si(C_2B_9H_{11})_2$	S, X	[198]
$(RC_2B_9H_{11}$-1-N=$)_2$ R = H, Me, E	S, H, IR, UV, Raman	[324]
$RC_2B_9H_{11}$-N_2Me_2-1,2-$RC_2B_{10}H_{11}$ R = H, Me, Ph	S, H, IR (var. temp)	[325]
2,2-bipyridyl$[OC(O)(CH_2)_3C_2B_9H_{11}]_2$	S(CsF-promoted deboronation of 2,2-bipyridine $[1,2\text{-}OC(O)(CH_2)_3\text{-}C_2B_{10}H_{11}]_2$)	[88]
2,2′-$N_2C_{10}H_6[C(O)O(CH_2)_3$-*nido*-7,8-$RC_2B_9H_{10}]_2$ R = H, Me bipyridyl	S, H, B, C, IR	[326]
Anionic 7,8-$C_2B_9H_{12}^-$ and 7,8-$C_2B_9H_{11}^{2-}$ Single-Cage Derivatives		
No substituents on boron		
$C_2B_9H_{12}^-$	S, H, B, IR	[44,158]
	S, B, IR	[141]
	IR	[45]
	Raman	[330]
	pK_a	[331,332]

Compound	Information	References
K^+ $C_2B_9H_{12}^-$	X	[333]
$C_{10}H_6(NMe_2)_2^+$ $C_2B_9H_{12}^-$	X	[138]
$K^+[Me(CH_2)_{15}]C_2B_9H_{11}^-$ incorporation in liposome bilayer membrane for BNCT	In vivo tests for oral cancer in hamsters	
[*N*-methyl-2,2′-bipyridinium]$^+$ $C_2B_9H_{12}^-$	S, X, H, B, N, XPS	[336]
$EtMeN_2C_3MeH_2^+$ $C_2B_9H_{12}^-$ 1,2-Me_2-3-Et-imidazolium salts ionic liquids	S, X, H	[337]
$H(Me_2SO)_2^+$ $C_2B_9H_{12}^-$	S, X, H, B(2d)	[123]
$(Me_2N)_3PNH_2^+$ $C_2B_9H_{12}^-$	S, X	[76]
$[(Me_2N)_3PNHBNP(NMe_2)_3]_2O^{2+}[C_2B_9H_{12}^-]_2$	S, X	[76]
$C_5H_{10}NH_2^+$ $C_2B_9H_{12}^-\cdot C_5H_{10}NH$	S (degradation of 1,2-$C_2B_{10}H_{12}$ with piperidine)	[70]
$(Me_2N)_2C_{10}H_6^+$ $C_2B_9H_{12}^-$ $(Me_2N)_2C_{10}H_6$ = proton sponge	S, H, B, C	[90]
$C_2B_9H_{11}^{2-}$	S, B	[158]
$[M^+]_2$ 7,8-/7,9-/2,9-$C_2B_9H_{11}^{2-}$ M = Li, Na, K	S, H, B, C	[119]
Tl_2^{2+} $PhMeC_2B_9H_9^{2-}$	S, IR	[338]
$\{CH[C_6H_4$-*p*-$O(CH_2)_2NMe_2H]CEtPh\}^+$ $C_2B_9H_{11}^-$ Tamoxifen analogue for BNCT	S, X, H, B, C, MS	[339]
$[Cs_5^+(C_2B_9H_{12})_4Cl^-]_n$	S, X, H, B, IR	[342]
$(C_9H_7$-$Me_2C)C_2B_9H_{11}^-$	S, H, B, C, IR	[344]
$M_4(acac)_4(OH)_{11}^+$ $C_2B_9H_{12}^-$ M = Zr, Hf	S, MAG, IR, H, C	[345]
$NH_3Me]_2[Co(NH_2Me)_3Br(C_2B_9H_{11})_2]^-$ isomers	S, UV, Raman, IR	[348]
$[Au_9M_4Cl_4(PMePh_2)_8]^+$ $C_2B_9H_{12}^-$ M = Au, Ag, Cu	S, X, H, B, MS	[349]
$(C_4H_8O)_5LnCl_2^+$ $C_2B_9H_{12}^-$ Ln = Y, Yb	S, X, H, B, C, IR	[351]
$RC_2B_9H_{11}^-$ R = Me, Ph	S, IR	[45]
$(Me_2CH_2CH_2)RC_2B_9H_{10}^-$ R = H, CH_2CH_2OMe	S, X, H, B, IR	[356]
Me(*n*-C_5H_{11})$C_2B_9H_{10}^-$	S, H, B, C, IR	
(*cyclo*-CH=CH-CH_2)$C_2B_9H_{10}^-$	S, B, H, IR	[357]
$[Me(CH_2)_3CH{=}CHCH_2]C_2B_9H_{11}^-$	S, H, B, IR, MS	[86]
$RMeC_2B_9H_{10}^-$ R = H, $C_7H_6^+$	B	[272]
	S	[55]
$HNEt_3^+/Me_3NCH_2Ph^+$ $Ph_2C_2B_9H_{10}^-$ (two salts)	X	[360]
$(MeC_6H_4)_2C_2B_9H_{10}^-$	S, H, B	[362]
Me(*cyclo*-HOC_6H_{10})$C_2B_9H_{10}^-$	S, H, B, C, IR	[363]
$[MeO(CH_2)_2]C_2B_9H_{11}^-$	S, X, H, B, C, IR	[364]
K^+(18-crown-6)$[MeOO(CH_2)_2]C_2B_9H_{11}^-$	S, X, H, B, C, IR	[364]
Na^+(17-crown-5)$C_2B_9H_{10}^-$	S, X, H, B	[662]
$K^+\{K^+R[C(CH_2)_2O(CH_2)_2O$-10-$(C_2B_9H_{11})]_2\}^-$ R = CH_2CH_2, *o*-C_6H_4, S crown ethers	S, H, B, C, IR, MS	[668]
$K^+\{H_{10}B_{10}C_2[K^+C(CH_2)_2O(CH_2)_2X-10-(C_2B_9H_{11})]_2^-\}$ X = O, S crown ethers	S, H, B, C, IR, MS	[668]
$[MeOC(O)]C_2B_9H_{11}^-$	S, B, H, C, IR	[114]

Continued

Compound	Information	References
$[R(O)C]C_2B_9H_{11}^-$ R=H, MeO	S, H, B	[95]
K^+ $(Me_2NCH_2)RC_2B_9H_{10}^-$ R=H, Me	S, X R=H	[365]
[*cyclo*-7,11-$CH_2CH_2N(CH_2Ph)_2]RC_2B_9H_9^-$ R=H, Me	S, X(Me), H, B, C, IR, MS	[298]
$[PhCH_2NH_2CH_2CH_2)_2]RC_2B_9H_{10}^-$ R=H, Me	S, X(Me), H, B, C, IR, MS	[298]
$(Me_2NCH_2)C_2B_9H_{11}^-$	S, H, B, C, IR	[371]
(*p*-$C_6H_4NH_2)C_2B_9H_{11}^-$	S, H, B	[144]
$Ph(C_6H_{10}$-2′-$NH_2)C_2B_9H_{10}^-$	S, H, B, C, IR	[372]
H^+[*cyclo*-C=C$(NH_2)(C_5Me_2HN)$-S-]$C_2B_9H_{11}^-$ thienopyridine	S, H, B, MS, IR	[283]
(2′-$C_5H_4N)(RS)C_2B_9H_{10}^-$ R=Et, $CHMe_2$	S, X, H, B, C, IR	[373]
$(NC_5H_4CH_2)C_2B_9H_{11}^-$	S, IR, MS, B, H	[374]
$(H_5C_5N$-$CH_2)_2C_2B_9H_{10}^-$ $OSO_2CF_3^+$ triflate	S, X, H, B	[125]
$[HNC_4H_3$-$CH_2]C_2B_9H_{11}^-$ pyrrole	S, H, E	[375]
$(H_2NCH_2)C_2B_9H_{10}^{3-}$	S, H, B, C, IR	[376]
$(Me_2NCH_2)RC_2B_9H_{10}^-$	S, X, H, B, C, IR	[299]
$Me(NCCH_2)C_2B_9H_{10}^-$	S	[311]
$(Me_2NCH_2)_2(H)C_2B_9H_{10}^-$	S, X, H, B	[378]
$(NC_5H_4CH_2)C_2B_9H_{11}^-$	S, H, B, C, IR, MS	[379]
$[Me_2NH(CH_2)_3]C_2B_9H_{11}$	S, H, B, C, IR, MS	[379]
$R[C_4H_4N$-$(CH_2)_3$-$]C_2B_9H_{10}^-$ R=Me, Ph	H, B, C, IR	[286]
[5-MeO-2-Me-3-MeOC(O)-indolyl]-CH_2-$C_2B_9H_{11}^-$	S, H, B, C, IR, MS	[648]
(CH_2OCH_2Me)[*cyclo*-$N_3P_3(O_2C_{12}H_8)_2]C_2B_9H_{10}^-$	S, X, H, C, P, IR	[380]
[*cyclo*-$N_3P_3(O_2C_{12}H_8)_2](\mu$-$OCH_2)_2C_2B_9H_{10}^-$	S, X, H, C, P, IR	[380]
$[MeC(O)]C_2B_9H_{11}^-$	S, X, H, B, C, IR	[114]
$PhCH_2NMe_3^+(MeOCH_2)C_2B_9H_{11}^-$	S, X, H, B, IR	[381]
$(CH_2)_n$*N*-*cyclo*-$\{C(O)C_6H_4C(O)\}]C_2B_9H_{11}^-$ *n*=2, 3 aminoalkyl	S, X(*n*=2), H, B, C	[129]
$NHMe_2^+$ $(CH_2)_nNHC(O)(C_6H_4$-*o*-$CO_2)C_2B_9H_{11}^-$ *n*=2, 3 aminoalkyl	S, X (*n*=2)	[129]
$(CH_2$-4-Me-5-thio-1,2,4-triazol$)C_2B_9H_{11}^-$	S, H, IR	[377]
cyclo-$CH_2NHC(=S)NHCH_2$-$C_2B_9H_{10}^-$	S, H, IR	[377]
$[SCN$-C_6H_4-$NHC(O)(CH_2)_4]C_2B_9H_{11}^-$ conjugated with monoclonal antibody Fab′ fragment labeled with ^{211}At for *in vivo* tissue distribution studies	S	[288]
1′,2′-(*nido*-7,8-$C_2B_9H_{11})_2C_6H_3$-4-NCS^{2-} conjugated with monoclonal antibody Fab′ fragment labeled with ^{211}At for *in vivo* tissue distribution studies	S	[288]
cyclo-$(4$-$MeC_6H_3)(\mu$-$S)_2C_2B_9H_{10}^-$	S, X, H, B, C	[382]
$[(H_3B)R_2P]R'C_2B_9H_{10}^-$ R=Et, Ph, $CHMe_2$; R′=Me, Ph	S, X ($CHMe_2$, Me), H, B, C, P	[134]
NMe_4^+ $(Ph_2OP)_2C_2B_9H_{10}^-$	S, H, C, P, B, IR	[384]
$(O=PPh_2)_2C_2B_9H_{11}$	S, X, H, C, IR	[385]
(glucosyl-$CH_2)C_2B_9H_{11}^-$	S, H, B, C, IR, MS	[379]

Compound	Information	References
$\{[Me(CH_2)_{16}\text{-}OCH_2]_2CHCH_2OCH_2\}C_2B_9H_{11}^-$ transferrin-loaded double-tailed lipid for BNCT	S, H, C, IR, MS	[278]
$(MeC{=}CH_2)(CH_2\text{-}O\text{-}CH_2)C_2B_9H_{10}^-$	S	[55]
$(MeOCH_2)_2C_2B_9H_{10}^-$	S, B, IR	[381]
$(ROCH_2)_2C_2B_9H_{10}^-$ R = CH=CHMe, H	S, IR	[388]
$Me[RO(CH_2)_3]C_2B_9H_{10}^-$ R = Et, $(CH_2)_2OMe$, $n\text{-}C_4H_9$ agent for extraction of Eu, Sr, Cs	S, B, H, C, IR	[389]
$R[R'(O)C\text{-}C_6H_4]C_2B_9H_9\text{-}9\text{-}^{125}I^-$ R = CH_2-β-D-glucose, R′ = OH, NH$(CH_2)_2NEt_2$; R = H, R′ = $N(CH_2)_2NEt_2$ radiolabeling; binding to melanoma cells	S, H, B, C, MS	[390]
[cyanocobalamin-$C(O)NH(CH_2)_4NHC(O)]C_2B_9H_{11}^-$ vitamin B-12	S, B, UV, MS, biological activity	[391]
[cyanocobalamin-$C(O)NH(CH_2)_4NHC(O)](C_2B_9H_{11})_2^{2-}$ vitamin B-12	S, B, UV, MS, biological activity	[391]
(thymidine)$C_2B_9H_{10}^-$ for BNCT targeting tumor cells	S, H, C, MS	[74]
Thymidine derivatives for BNCT substrates for human thymidine kinase I	S	[269]
(2′,4′-diamino-6-methylpyrimidine)$C_2B_9H_{10}^-$ antifolate	S, screening for anti-dihydrofolate reductase activity	[281]
$Me(PhSCH_2)C_2B_9H_{10}^-$	S	[311]
$(PhS)(HOCH_2)C_2B_9H_{10}^-$	S, IR, H, C, B	[394]
$(PhS)[C_9H_{13}O_2\text{-}C(O)OCH_2]C_2B_9H_{10}^-$	S, IR, H, C, B	[394]
$[HO(O)C(H_2N)CH(CH_2)_nS]C_2B_9H_{11}^-$ n = 4-6 amino acids	S, X, H, B, C, IR, MS	[619]
$(MeC_4H_2S)C_2B_9H_{10}^-$	S	[395]
$(S_2NC_7H_4)_2C_2B_9H_{10}^-$	S, H, B, COND	[77]
$NMe_4^+[S(CHMe_2)](PPh_2)C_2B_9H_{10}^-$	S, X, H, B, IR	[68]
Na^+ μ(7,8)-$SCH_2(CH_2OCH_2)_3CH_2S\text{-}C_2B_9H_{10}^-$	S, X, H, C, IR	[196]
$[HNMe_3^+]_2$ [*anti*-7,7′,8,8′-$(S_2)_2(C_2B_9H_{10})_2]^{2-}$	S, X, B	[102]
NMe_4^+ $\{S[(CH_2)_2O]_3CH_2S\text{-}C_2B_9H_{10}\}^-$	S, X	[208]
$(MeC_4H_2S)C_2B_9H_{11}^-$	S, B, MS	[395]
$[(CH_2)_3$-S-thiouracil$]C_2B_9H_{11}^-$	S, H, IR	[377]
Cyclo-[SCH(OEt)S]-7,8-$C_2B_9H_{10}^-$	S, IR, H	[303]
Cyclo-$S[(CH_2)_2S]_4\text{-}C_2B_9H_{10}^-$	S, C, H, IR	[208]
Cyclo-(S-X-S)$C_2B_9H_{10}^-$ X = various organic chains	S, H, C, IR	[197]
$[O{=}C(\mu\text{-}S_2)]C_2B_9H_{10}^-$	S, IR, MS, COND	[399]
$Me(MeS)C_2B_9H_{10}^-$	S, H, IR	[208]
$ClPhC_2B_9H_{10}^-$	S	[55]
$(HCl{\cdot}NH_2)_2C_2B_9H_9^-$	S, H, B, C	[594]
$[(NH_2)_2C_4N_2Me]C_2B_9H_{11}^-$ conjugates with proteins in protein data bank (PDB) and HIV for BNCT		[595]
$[H_2N\text{-}C({=}NH_2)NHCH_2]C_2B_9H_{11}^-$ guanidinyl derivative	S, X, H, B, C, IR, MS	[608]
$[O_2N\text{-}NH\text{-}C({=}NH_2)NHCH_2]C_2B_9H_{11}^-$	S, H, B, C, IR, MS	[608]
$[EtNH\text{-}C({=}NH_2)NHCH_2]C_2B_9H_{11}^-$ guanidinyl derivative	S, X, H, B, C, IR, MS	[608]
(Phthalocyanine)$\left[S(CH_2)_6-C_2B_9H_{10}\right]_8^{8-}$ $8K^+$ candidate boron carrier for BNCT	S, H, B, UV, MS, solution properties	[592]

Continued

Compound	Information	References
$(C_5H_{11})NC_5H_4Me^+[(n\text{-}C_6H_{13})_2P]_2C_2B_9H_{10}^-$ cocatalyst with Ir(0) nanoparticles in the synthesis of 1-dimensional borate esters via hydroboration of methyl oleate, methyl 10-undecenoate, and 1-hexene	S, H, B, C, P, IR	[596]
$RC_2B_9H_{11}^-$ R=C(O)NH$(CH_2)_4$-*cyclo*-1′,4′-NC_4H_8N-C_6H_4-*o*-OMe *n*=1,3	S, X	[607]
$RC_2B_9H_{11}^-$ R=NH-C(O)-C_6H_3ClOMe $P2X_7$ receptor antagonist; central nervous system antidepressant	S, X, H, inhibition of human $P2X_7$ pore formation	[631]
K^+ $Me(CH_2)_{15}C_2B_9H_{11}^-$ in liposome bilayer membrane, BNCT therapy for oral cancer		[605]
(5-TDGP)$C_2B_9H_{11}^-$ TDGP=thio-C-glucopyranose incorporation into human SK-Hep1 carcinoma cells	S, H, B, C, IR, MS	[609]
(distearoyl lipid)$C_2B_9H_{11}^-$ M^+ M=Na, K incorporation in liposomes for BNCT	S, biodistribution in mice	[611]
(deoxyribose)$C_2B_9H_{11}^-$	S, H, B, C, IR, MS, cytotoxicity	[643]
{—$[C_7H_5\text{-}(CH_2)_5\text{-}C_6H_4\text{-}p\text{-}NC_{12}H_8]_x$-$\left[C_7H_5-(CH_2)_5-nido-7,8-RC_2B_9H_{10}\right]_y^-$}$_n$ R=Ph, Me polynorbornene-carbazole-carborane copolymers	S, H, B, C, E, UV, photoluminescence, TGA, DSC, gel permeation chromatography	[628]
$[(CO)_5W(MeS)]C_2B_9H_{11}^-$	S, H, B, C, IR, MS	[612]
$[P(O)R_2]_2C_2B_9H_{10}(\mu\text{-}H)$ R=Ph, $CHMe_2$	S, X, H, B(2d), C, IR	[660]
$Mg^{2+}[P(O)(CHMe_2)]_2C_2B_9H_{10}^-$	S, X	[660]
$[(CH_2)_{10}(NC_9H_5Me\text{-}NH_2)_2]^{2+}[nido\text{-}7,8\text{-}C_2B_9H_{12}^-]_2$ delaquinium incorporation in liposomes for BNCT	Toxicity, fluorescence	[621]
7-$H_2NSO_2NHCH_2$-8-R-$C_2B_9H_{10}^-$ R=H, Ph	X(R=H, complex with carbamic anhydride CAII), in vitro inhibition in carbonic anhydrase	[624]
7-$H_2NSO_2NH(CH_2)_3$-8-Ph-$C_2B_9H_{10}^-$	*In vitro* inhibition in carbonic anhydrase	[624]
$[\mu\text{-}Cp^*{}_2Rh_2H](\mu\text{-}S)_2C_2B_9H_{10}^-$	S, X, H, B, IR	[626]
$[Cp^*Ir](\mu\text{-}S)_2C_2B_9H_{10}^-$	S, X, H, B, IR	[626]
C_6H_4-1,3-$\left[CH_2OC_6H_3-1,3-(RC_2B_9H_{10})_2\right]_2^{4-}$ R=Ph, Me	S, H, B, C, IR, fluorescence emission	[655]
XC_5H_3-1,3-$(CH_2-R_2B_9H_{10})_2^{2}$ X=CH, N	S, H, B, C, IR, fluorescence emission	[655]
D or hydrocarbon substituents on boron		
$(RS)R'C_2B_9H_9D^-$ R, R′=Ph; Ph, Me	S, B, H, C	[402]
$C_2B_9H10\text{-}5,6\text{-}Me_2^-$	S, H, B, C, IR, MS	[659]
$C_2B_9H_8$-1,5,6,10-Me_4^-	S, H, B, C, IR, MS	[659]
$C_2B_9H_{11}$-*n*-R^- *n*=5, 9 R=Me, Et, C_6H_{13},Ph, $CH{=}CH_2$	S, B	[169]
$C_2B_9H_{11}$-9-CH_2Ph^-	S	[167]
$C_2B_9H_{11}$-9-Et^-	S, B	[157]
$C_2B_9H_{11}$-9-$(n\text{-}C_4H_9)^-$	S, B	[157]
$C_2B_9H_{11}$-9-$(CH_2{=}CHMe)^-$	S, B	[157]
$C_2B_9H_{11}$-3-Ph^-	S, B	[143]
$Tl_2C_2B_9H_{10}$-9-Ph^-	S, IR	[403]
$Me_2C_2B_9H_9$-9-CH_2Ph^-	S, B	[166]
$C_2B_9H_{11}$-μ-Me^-	S, B	[160]

Compound	Information	References
$(Ph_3P)_2N^+C_2B_9H_2Me_8^-$	S, X, H, B, C	[92]
$C_2B_9H_{11}$-3-$(CH_2)_nC_{16}H_9^-$ $C_{16}H_9$ = pyrene	S, H, B, C, MS	[642]
$RC_2B_9H_{10}$-5-C≡C-(C_5H_4)FeCp$^-$	S, X, H, B, C, IR, UV, MS, Raman, E	[656]
$C_2B_9H_{11}$-2-C≡C–C_6H_4–*p*-C≡C–OSi$(CHMe_2)_2^-$	S, H, B, C, IR, MS	[669]
$C_2B_9H_{11}$-2-C≡C–C_6H_4-*p*-C≡C–$C_6H_4CH_2OH^-$	S, H, B, C, IR, MS	[669]
Si- or Ge-containing substituents on boron		
$(Me_2ClE)C_2B_9H_{10}$-9-$SeMe_2$ E = Si, Ge	S, X, H, B, C	[318]
N- or P-containing substituents on boron		
(lactose)$C_2B_9H_{10}^-$	S, H, B, MS	[100]
$Me_2C_2B_9H_8$-9-NMe_3-12-Br^-	S, H, MS	[58]
$C_2B_9H_{11}$-10-$O(CH_2)_2$-O-$(CH_2)_2$-N_3^-	S, H, B, C, IR	[187]
$C_2B_9H_{11}$-7-(2′-pyridyl)H	S, X, H, B, C, IR, MS	[406]
$C_2B_9H_{11}$.py(X)$^-$ pyridine derivatives	S, B	[142]
$RC_2B_9H_9$-9-X^- R = C(O)NCH_2-C_6H_4-*p*-*cyclo*-CN_4CH tetrazinyl X = H, ^{123}I, ^{125}I	S, H, B, C, MS, binding to H520 cells with TCO-modified antibody [TCO = (E)-cyclooct-4-enol]	[664]
$C_2B_9H_{11}$-10-BH(*cyclo*-CHNRC=CNMe–$)_2$ R = Me, Et imidazoles	S (reactions of *o*-carborane w/*N*-heterocyclic carbenes), X, H, B	[582]
$C_2B_9H_{10}$-thymidine$^-$ for BNCT (targeting tumor cells)	S, H, C, MS	[74]
$C_2B_9H_{11}$-9-PMe_2Ph	S, X, H, B, P	[408]
$C_2B_9H_{10}$-5(6)-Br-9-L L = 4-picoline, 3-picoline, 4-benzylpyridine, pyridine, 3-bromopyridine	S, H, B, IR, UV, XPS	[150]
(single-wall carbon nanotube)[N$(CH_2)_4$-$RC_2B_9H_{10}^-$ $Na^+]_n$ R = Me, Ph	S, H, B, C, IR, boron distribution in tissue	[409]
$R_2C_2B_9H_8$-9-L^- R = H, Me; L = NMe_3, pyridyl	S	[133]
$C_2B_9H_{11}$-10-$[(CH_2)_2O]_2NH_2SO_2NH_2^-$	*In vitro* inhibition in carbonic anhydrase	[624]
[7,8-$C_2B_9H_{11}$-10-$O(CH_2)_2O(CH_2)_2$-6′-O-adenosine]$^-$	S, H, B, UV, MS, fluorescence, neutrophil response to PNA stimulation	[640]
[7,8-$C_2B_9H_{11}$-10-$O(CH_2)_2O(CH_2)_2$-*cyclo*-N_3C_2H-$(CH_2)_3$-2″-O$^-$adenosine]$^-$	S, H, B, UV, MS, fluorescence, neutrophil response to PNA stimulation	[640]
O- or S-containing substituents on boron		
$R_2C_2B_9H_8$-9-SMe_2^- R = H, Me	S	[133]
$C_2B_9H_{11}$-10-$O(CH_2)_4$-O-C_6H_4-C(O)O^-	S, H, B, C, IR	[187]
$C_2B_9H_{11}$-10-$O(CH_2)_2$-O-$(CH_2)_2$-O-C_6H_4-C(O)O^-	S, H, B, C, IR	[187]
$C_2B_9H_{11}$-10-$O(CH_2)_2O(CH_2)_2N_3^-$ nucleoside conjugate	S(dipolar addition[chemical ligation), H, B, IR, MS, UV	[412]
$C_2B_9H_{11}$-9-$(CH_2)_n$SMeW$(CO)_5^-$ *n* = 0,1	S, H, B, C, IR, MS	[612]
$C_2B_9H_{11}^-$-9-S-$C_5H_4NH^+$	S, H, B(2d), C, IR, MS	[606]
$C_2B_9H_{10}$-9-I-11-SR^-′R = *p*-$C_6H_4NO_2$, CN, 2′-C_5H=NH	S, X, H, B(2d), C, IR, MS	[606]
$C_2B_9H_9$-6,11-Cl_2-9-SMe_2	S, X, H, B, IR	[618]
$C_2B_9H_{11}$-10-$O(CH_2)_2$OH	S, H, B, C, MS	[661]

Continued

Compound	Information	References
$C_2B_9H_{11}$-10-[$(CH_2)_2O]_2NH_2SO_2NH_2^-$	*In vitro* inhibition in carbonic anhydrase	[624]
F-, Cl-, Br-, I, or At-containing substituents on boron		
$C_2B_9H_{10}$-5,6-Br_2^-	S, B	[143]
$C_2B_9H_{11}$-9-X^-K^+ X = I, SCN	S(diaphragm electrolysis)	[414]
Cs^+ (*p*-C_6H_4NCS)$C_2B_9H_{10}$-9-I^-	S, X, H, B	[144]
$Me_2C_2B_9H_9I^-$	S, H, B, IR	[148]
$MeC_2B_9H_8$-9,11-I_2^-	S, H, B(2d), IR	[413]
$C_2B_9H_{10}$-9,11-I_2^-	S, H, B, C	[667]
$PhC_2B_9H_{10}I^-$	S, B	[145]
$Ph_2C_2B_9H_9$-9-I^-	S, X, H, B, IR	[146]
$C_2B_9H_9$-6,11-Cl_2-9-SMe_2	S, X, H, B, IR	[618]
$C_2B_9H_{10}$-5-I_2^- $Tl^+{}_2$	S, H, B, C, MS	[600]
$C_2B_9H_9$-5,6-I_2^- $Tl^+{}_2$	S, H, B, C, MS	[600]
C_6F_4H-OC(O)$(CH_2)_2$]$C_2B_9H_{11}$-9-$^{211}At^-$ conjugation with bovine serum albumen (BSA); radioastatination	S	[589]
$C_2B_9H_{11}$-5-I^-	S, H, B, C, IR, MS	[659]
	X	[667]
$C_2B_9H_{11}$-9-I^-	S, H, B, C	[667]
$RC_2B_9H_9$-5,6-I_2^- R = Me, Ph	S, H, B, C, IR, MS	[659]
$C_2B_9H_{10}$-6,9-I_2^-	S, H, B, C, P, MS	[654]
$C_2B_9H_9$-5,6,9-I_3^-	S, H, B, C, IR, MS	[659]
	S, H, B, C, P, MS	[654]
$C_2B_9H_9$-5,6,11-I_3^-	X	[667]
$PhC_2B_9H_7$-1,5,6,10-I_4^-	X	[667]
$RC_2B_9H_7$-1,5,6,10-I_4^- R = Me, Ph	S, H, B, C, IR, MS	[659]
$C_2B_9H_8$-1,5,6,10-I_4^-	S, X(H)	[658]
(HO)$RC_2B_9H_9$-9-X^- X = ^{123}I, ^{125}I; R = OH, C(O)OH lipophilicity, biodistribution in mice	S, H, B, C, IR, MS	[610]
$Fe[HC(pz)_3]_2^{2+}$ [$C_2B_9H_8$-1,5,6,10-X_4^-]$_2$ X = H, Br, I pz = pyrazolyl spin-crossover, thermochromism	S, H, B, MAG, Mössbauer, IR, electron diffuse reflectance spectra	[635]
Anionic Multi-Cage Derivatives, Nonmetal Substituents		
$O_{12}Si_8[(CH_2)_3-nido-CB_9H_{10}C-Me]_8^{8-}$ siloxanes R = Me, Ph	S, H, B, C, IR, MS	[404]
$(C_2B_9H_{11})$-$CH_2CH{=}CHCH_2$-$(C_2B_9H_{11})^{2-}$	S, H, B, IR, MS	[86]
C_6H_3-1,3,5-$[(p-C_6H_4)_n-C_6H_3-3,5-(CH_2-CB_9H_{10}CMe)_2]_3^{3-}$ 3Na^+ n = 0,1	S, H, B, C, MS, U, fluorescence	[416]
$[B_{12}\{Me[(CH_2)_6C(O)O]C_2B_9H_{10}\}_{12}]^{14-}$ dodecacarboranyl-closomer	S, B, MS	[417]
$(C_2B_9H_{10}C$-$CH_2OCH_2)_3C$-C(O)OH^{3-} pentaerythritol dendron building-block for BNCT	S, H, B, C, IR, MS	[418]
meso-(porphyrinH_2)$(C_6H_4-C_2B_9H_{11})_4^-$	S, UV	[275]

Compound	Information	References
meso-$[MeC_2B_9H_{10}\text{-}7\text{-}CH_2]_4$porphyrin$^-$	S, H, MS, IR, UV, interaction with DNA, resonance light scattering	[419]
$4Na^+$ tetrabenzoporphyrin$[(C_6H_4)C_2B_9H_{12}]_4{}^{4-}$	S, H, UV, MS, toxicity, cell uptake	[420]
$4K^+$ (porphyrin)-5,10,15,20-$(p-C_6H_4-S-C_2B_9H_{10})_4{}^{4-}$ photodynamic therapy (PDT)	S, H, UV, cell accumulation, photosensitization	[421]
$K^+[Me(CH_2)_{15}\text{-O-}CH_2]_2CH\text{-O-}CH_2\text{-}C_2B_9H_{11}]^-$ precursor to liposomes for BNCT	S, H, B, *in vitro* toxicity	[423]
$MeC_2B_9H_{10}\text{-}(CH_2)_3\text{-O-P(O)(OR)-O-}(CH_2)_3C_2B_9H_{10}\text{-}(CH_2)_2C(O)NH\text{-}C_6H_4\text{-}Ph_3$ porphyrin carboranyl phosphate diester	S, H, B, UV (fluorescence), MS BNCT	[425]
Porphyrin$(C_6H_5)(C_6H_4\text{-}p\text{-}NCH_2\text{-}nido\text{-}C_2B_9H_{10}{}^-)_3$	S, H, UV, MS	[426]
$4K^+$ porphyrin$[CH(CN)_2](C_6H_4-p-nido-7,8-C_2B_9H_{11})_4{}^{4-}$ chlorin for BNCT and PDT (photodynamic therapy)	S, UV, fluorescence emission spectrum	[427]
$[RC_2B_9H_9(CH_2)_2C(O)NH]_2C_{14}H_6O_2{}^{2-}$ R = H, Me, Ph; isomers anthraquinone derivatives BNCT	S, H, B, C, IR	[428]
$\mu\text{-}(CH_2)_n\text{-}(RC_2B_9H_{11})_2{}^-$ $n = 3, 4, 5$	S, H, IR, C, B, MS	[210]
$(C_2B_9H_{10})_2C_6H_4[C(O)OMe]^-$	S, H, IR, C, B, MS	[429]
$\mu\text{-TosN}(CH_2CH_2)_2\text{-}(C_2B_9H_{11})_2{}^-$	S, H, IR, C, B, MS	[210]
1,3/1,4-$C_6H_4(C_2B_9H_9-9-CH_2)_2{}^-$	S, B	[166]
$[S(Me)C_2B_9H_{10}]_2(CH_2)_n{}^-$ $n = 2, 3$	S, H, IR	[208]
2,6-$[(C(O)OMe)C_2B_9H_{10}\text{-}8\text{-S-}CH_2\text{-}]_2C_5H_3N^-$	S, H, B, C, IR, MS	[431]
$S(CH_2-C_2B_9H_{10})_2{}^{4-}$	S	[214]
$\{7,8\text{-}\mu\text{-}[S(CH_2CH_2O)_3CH_2CH_2\text{-}S](7,8\text{-}C_2B_9H_{11})_2\}^{2-}$	S, H, B, C, IR	[432]
$[MeO(CH_2)_2C_5H_4]_6Ti_6(\mu_3-O)_8{}^{2+}(1,2\text{-}C_2B_{10}H_{10})(\mu\text{-}S_2)_2(nido-7,8-C_2B_9H_{10})_2{}^{2-}$	S, X, H, B, C, IR	[433]
$C_6H_4[p-CH_2-O-C_6H_3(CH_2-RC_2B_9H_{10})_2]_2{}^{4-}$	S, H, B, C, UV, fluorescence emission	[434]
(porphyrin)-5,10,15,20-$[3,5-C_6H_3(CH_2-C_2B_9H_{10})_2]_4{}^{8-}$ *in vivo* and *in vitro* tumor uptake for BNCT and PDT	S	[587]
1,3,5-$[nido\text{-}7',8'\text{-}RC_2B_9H_{10}\text{-}CH_2C_6H_4(CH_2)_2SiMe_2\text{-}(CH_2)_3OC_6H_4]_3C_6H_3{}^{3-}$ R = Me, Ph photoluminescent dendrimers	S, H, B, C, MS, UV, TBA (Me)	[615]
1,3,5-$\{1,2,3\text{-}[nido\text{-}7',8'\text{-}RC_2B_9H_{10}\text{-}CH_2C_6H_4(CH_2)_2SiMe_2\text{-}CH_2)_3O]_3C_6H_2\text{-}5\text{-}CH_2OC_6H_4\}_3C_6H_3{}^{9-}$ R = Me, Ph photoluminescent dendrimers	S, H, B, C, MS, UV, TBA (Me)	[615]
Transition metal σ- and μ-complexes of 7,8-$C_2B_9H_{12}{}^-$ and 7,8-$C_2B_9H_{11}{}^{2-}$		
Ti, Zr		
$[(RN)_2C(NMe_2)(THF)Zr(C_9H_6)]C_2B_9H_{10}$ R = $CHMe_2$, cyclohexyl	S, H, B, C	[284]
$(C_9H_7)\{Zr[(NCHMe_2)_2C(NMe_2)]_2\}C_2B_9H_{10}$ R = $CHMe_2$, cyclohexyl	S, H, B, C	[284]
$\{cyclo\text{-}C_9H_6\text{-}C(=NR)CNR\text{-}Zr(NR)_2C(NMe_2)\}C_2B_9H_{10}$ R = $CHMe_2$, cyclohexyl	S, H, B, C	[284]
$[cyclo\text{-}C_9H_6\text{-}C(NHR)=NR\text{-}Zr(NR)_2C(NMe_2)\}C_2B_9H_{10}$ R = $CHMe_2$, cyclohexyl guanidine complexes	S, H, B, C	[284]
Cr, Mo, W		
$\mu(7,8)\text{-}(C_3H_5)(CO)_2Mo(SCH_2CH_2S)C_2B_9H_{10}$	S, X, H, B	[437]
$(MeC_6H_4)CMo(CO)(PPh_2C_2H_4PPh_2)_2(O)\}^+Me_2C_2B_9H_{10}{}^-$	S, X, H, C	[438]

Continued

Compound	Information	References
$Me_2C_2B_9H_9$-3-NC-M$(CO)_5^-$ M=Mo, W	S, IR	[306]
$(MeC_6H_4)C{\equiv}Mo(CO)(Ph_2PC_2H_4PPh_2)_2^+$ $Me_2C_2B_9H_{10}^-$	S, H, C	[438]
$Me_2C_2B_9H_8$-9,11-$(CH_2C_6H_4Me)_2$-(μ-H)$_2$W(CO)$_2$Cp	S, X, H, B, C, IR	[439]
$(OC)_4W$(μ-MeS)$_2C_2B_9H_9$-10-SMe_2	S, X, H, B, C	[657]
$[(OC)_5W$-MeS$]RC_2B_9H_9$-10-SMe_2 R=H, MeS	S, X, H, B, C	[657]
Fe, Ru, Os		
$C_2B_9H_{12}$-9-Fe$(CO)_2$(MeCN)Cp	S, B, H, IR, MS	[440]
$C_2B_9H_{12}$-9-Fe(CO)$(CNC_6H_{11})_2$Cp	S, B, H, IR, MS	[440]
$C_2B_9H_{11}$-9-CpFe$(CO)_2^-$	S, B, H, IR, MS	[440]
$Me_2C_2B_9H_{10}$-9-Fe$(CO)_2$Cp	S, B, H, IR, MS	[440]
[$(MePh_2P$-η^5-$C_5H_4)$Fe(η^5-$C_5H_4PPh_2{}^+$-$C_2B_9H_{11}$-9-SMe^-	S, B, H, C,P, IR	[31]
*syn-/anti-*Fe$[Me(C_5H_4)C_2B_9H_{10}]_2^-$	S, H, B	[441]
μ(7,8)-$\{(PPh_3)_2ClRu[S(CH_2)_2S]\}C_2B_9H_{10}$ Ru-H-B	S, X, IR, H, B	[446]
$(PPh_2)MeC_2B_9H_{10}$-μ_3-RuCl(PPh_3)L L=PPh_3, EtOH	S, X, H, B, P, IR	[447]
μ(7,8)-$[(MeC_6H_4CHMe_2)RuCl(SPh)_2]C_2B_9H_{10}$	S, X, H, B, IR	[448]
(CO)Ru$[(Ph_2P)_2C_2B_9H_{10}]_2$	S, H, B, IR, P	[109]
$[Ph_2P(CH_2)_3PPh_2]ClRu^+$ $Me_2C_2B_9H_{10}^-$ catalyst for methyl methacrylate polymerization	S	[274]
$R_2C_2B_9H_7$-(μ-H)$_3$-*exo*-Ru$(PPh_3)_2$Cl R=H, Me catalyst for methyl methacrylate polymerization	S	[274]
	E, S(MALDO-TOF)	[650]
$R_2C_2B_9H_7$-*exo*-5,6,10-(μ-H)$_3$RuCl$(Ph_2PCHMeCH_2CHMe)$ R=H, Me	S, X(Me), H, B, P, IR	[450]
3,1,2-CpFe$(C_2B_9H_9)$-4-SMe_2-8-Hg-10′-*nido*-7′,8′-$C_2B_9H_8$-5′,6′,10′-(μ-H)$_3$RuCl$(PPh_3)_2$	S, X (*trans* isomer), B, P	[451]
$NMe_4{}^+$ $(C_2B_9H_{10}$-*n*-$S(CH_2)_nS)_2RuCl^-$ *n*=2, 3	S, X (*n*=2), H, B, IR	[445]
$(C_2B_9H_{10}$-μ-$SMe_2)RuCl_2(PMe_2Ph)^-$	S, B, H, IR	[445]
RuXLL′-$(PPh_2)RC_2B_9H_{10}$ X=Cl, H; R=H, Me, Ph; L=PPh_3; L′=PPh_3, CO, tetrahydrothiophene, C_2H_5OH	S, H, B, P, IR	[447]
[*cyclo*-$(C_6H_4)_2]C_2B_9H_{10}^-$	S, X, H, B, C, MS, UV	[666]
(*cyclo*-C_6H_4-$C_4SH_2)C_2B_9H_{10}^-$ thiophene	S, H, B, C, MS, UV	[666]
[*cyclo*-$(C_4SH_2)_2]C_2B_9H_{10}^-$ thiophene	S, H, B, C, MS, UV	[666]
(terpyr)Ru[(terpyr)$(C_2B_9H_{10})$	S, H, B, IR, C, MS	[310]
Ru[terpyr-O$(CH_2)_3$-$C_2B_9H_{10}]^+$ 1,2-$C_2B_{10}H_{11}$-1-$(CH_3)_2$-O(terpyr)$^-$	S, H, B, C, MS	[310]
$[C_2B_{10}H_{11}$-$(CH_2)_3$-O-(terpyr)]Ru[(terpyr)-O-$(CH_2)_3$-$C_2B_9H_{10}]$	S	[267]
$(PhS)RC_2B_9H_{10}$-μ-S, H, H)-RuCl$(PPh_3)_2^-$ R=Me, Ph	S, H, B,P, IR	[444]
Ru[(terpyr)$C_2B_9H_{10}]_2$	S, H, B, C, IR, MS	[310]
$[RuH(PPh_3)_2]$-7,8$(Ph_2P)_2C_2B_9H_{10}$ Ru-P, Ru-H-B(11), Ru-H-B(2)	H, B, P	[452]
$[RuCl(PPh_3)_2]$-7,8$(Ph_2P)_2C_2B_9H_{10}$ Ru-P, Ru-H-B(11), Ru-H-B(2)	H, B, P	[452]
exo, nido-Cl$(Ph_3P)_2$Ru-(μ-H)$_3$-7,8-*nido*-$C_2B_9H_8$-9-Hg-$(C_2B_{10}H_{11})$	S, X, H, B, P	[453]

Compound	Information	References
$Cp^*MRu(C_8H_{12})(\mu\text{-}S)_2(OMe)(C_2B_9H_9)$ M=Co, Rh, Ir	S, X(Co), H, B, IR	[454]
$R_2C_2B_9H_7(\mu\text{-}H)_3Ru(PPh_3)_2Br$ R=H, Me (2 isomers)	S, H, B, P	[663]
$Me_2C_2B_9H_{10}\text{-}(\mu\text{-}H)_3OsCl(PPh_3)_2$	S, X, H, P	[455]
$Cl(Ph_3P)_2Os\text{-}7,8\text{-}Me_2C_2B_9H_9$	S, H, P	[270]
Co, Rh, Ir		
$Co(NH_2Me)_5Br^{2+}[C_2B_9H_{12}]_2^-$	S, UV, Raman, IR	[348]
$NH_3Me]_2[Co(NH_2Me)_3Br(C_2B_9H_{11})_2^-$ isomers	S, UV, Raman, IR	[348]
$Cp^*Co[\mu\text{-}S(CO_2Me)]_2C_2B_9H_9$	S, H, B, C, IR, MS	[647]
$Cp^*Co(\mu\text{-}S)_2(CH_2CO_2)C_2B_9H_9$	S, H, B, C, IR, MS	[647]
$Cp^*CoRu(C_8H_{12})(\mu\text{-}S)_2(OMe)(C_2B_9H_9)$	S, X, H, B, IR	[454]
$\mu(7,8)\text{-}[(C_8H_{12})Rh(PPh_2)_2]C_2B_9H_{10}$	S, X, H, B, P, IR	[458]
$\mu(7,8)\text{-}\{(PPh_3)_2Rh[S(CH_2)_2S]\}C_2B_9H_{10}$	S, X, IR	[459]
$[Fe(C_5H_4)_2(\mu\text{-}PPh_2)_2Rh(\mu\text{-}PPh_2)]PhC_2B_9H_{10}$ enantiomers	S, H, B, C, P, IR	[461]
$(PhS)PhC_2B_9H_{10}\text{-}Rh(C_8H_{12})$	S, X	[402]
$Me_2C_2B_9H_7$-5,10-$(Ph_3P)_2Rh\text{-}(\mu\text{-}H)_2$-10-*endo*-$AuPPh_3$	S, X, H, B, P	[462,463]
$R_2C_2B_9H_9\text{-}(\mu\text{-}H)_3$-5,6,10-$RhCl(PPh_3)_2$ R=H, Me	S, X (R=H), H, B, P(H)	[464]
$(SPh)MeC_2B_9H_{10}\text{-}Rh(PPh_3)_2$	S, X, H, B, P, IR	[467]
$(Ph_2P)MeC_2B_9H_{10}\text{-}Rh(C_8H_{12})$ 2 Rh-B-H	S, X, H, P, B, IR	[468]
$\mu(7,8)\text{-}[(Me_2SCH)(PPh_2)]C_2B_9H_{10}\text{-}Rh(C_8H_{12})$	S, X, H, B, P, IR	[469]
$\mu(7,8)\text{-}(CH_2)_3C_2B_9H_{10}\text{-}10\text{-}[(CH_2)_2C(O)O(CH_2)_3Me]\text{-}Rh(PPh_3)_2$	S, X, P	[470]
$\{\mu\text{-}S\text{-}(S\text{-}(CH_2)_2\text{-}S)C_2B_9H_{10}\}RhCl\{\mu\text{-}(S\text{-}(CH_2)_2\text{-}S)\text{-}C_2B_9H_9\}$	S, X, B, IR	[471]
$[Cp^*M\text{-}7,8\text{-}(SCH_2C(O)OMe)(S)C_2B_9H_{10}]_2$ M=Rh, Ir	S, X, H, B(Rh), IR	[472]
[*cyclo*-$SCp^*IrRh(C_8H_{12})S]C_2B_9H_9\text{-}\mu(Ir,B)\text{-}OMe$	S, X, H, B, IR	[473]
$Cp^*RhRu(C_8H_{12})(\mu\text{-}S)_2(C_2B_9H_{10})$	S, H, B, IR	[454]
$Cp^*RhRu(C_8H_{12})(\mu\text{-}S)_2(OMe)(C_2B_9H_9)$	S, H, B, IR	[454]
NMe_4^+ $\{Cp^*ClRh[\mu(7,8)\text{-}(SCH_2CH_2(OCH_2CH_2)_3)S]C_2B_9H_{10}\}^-$	S, X, H, B, IR	[474]
NMe_4^+ $[\mu(7,8)\text{-}(SCH_2CH_2S)C_2B_9H_{11}\text{-}MClCp^*]^-$ M=Rh, Ir	S, X, H, B, IR	[474]
RhL_4^+ $(PhS)MeC_2B_9H_{10}^-$ L=PPh_3, $PMePh_2$, PEt_3		[466]
$[(MeOCH_2)C_2B_9H_{10}]$-*n*-$(C_9H_6)Rh(C_9H_7)^-$ *n*=9,10	S, H, B, IR(2d)	[460]
$(Ph_3P)_2Rh\text{-}u\text{-}SC(O)CH_2S\text{-}7,8\text{-}C_2B_9H_{10}^-$	S, IR, H, B,P	[398]
	X	[476]
6,10-$(PPh_3)[P(cyclohexyl)_3]Rh\text{-}(\mu\text{-}CH_2C_6H_4CH_2)C_2B_9H_{10}$	S, H(variable temp), P	[475]
	X	[476]
4,9-$(PPh_3)_2Rh\text{-}MePhC_2B_9H_{10}$	X	[476]
$(Ph_3P)_2Rh(S, BH)\text{-}[\mu\text{-}S(CH_2)_3]C_2B_9H_{10}^-$	S, H, B, P	[189]
$(Ph_3P)_2ClRh(S, 2BH)\text{-}[\mu\text{-}S(CH_2)_3]C_2B_9H_{10}^-$	S, H, B, P	[189]
$(Ph_3P)_2Rh\text{-}7,8\text{-}Me_2C_2B_9H_{10}^-$	S, H, C, B, P	[287]
$(Ph_3P)_2Rh\text{-}(RS)R'C_2B_9H_{10}^-$ R=Ph, Et; R′=Me, Ph	S, H, B, IR, P(variable temp)	[466]
$(C_8H_{12})Rh\text{-}(PPh_2)C_2B_9H_{11}^-$	S, H, B, P, IR	[468]

Continued

Compound	Information	References
(C_8H_{12})Rh-(PhS)R′$C_2B_9H_8D^-$ R = Ph, Me	S, H, B, P, IR	[402]
(C_8H_{12})Rh(RS)R′$C_2B_9H_{11}$ R, R′ = Ph, Et, Me	S, B(variable temp), H(variable temp), C	[402]
$PhC_2B_9H_{10}$-(*n*-C_9H_6)Rh$(C_9H_7)^-$ *n* = 9,10	S, H, B, IR(2d)	[460]
$(Ph_3P)_2$Rh(μ-C_4H_9S)(μ-Ph_2P)-$C_2B_9H_{10}^-$	S, H, B, P, IR	[469]
[L(μ-$PPh_2)_2$Rh(μ-PPh_2)]$PhC_2B_9H_{10}$ L = *cyclo*-CH-O-CMe_2-O-CH, binap, $Fe(C_5H_4)_2$, $(CH_2)_4$ enantiomers	S, H, B, C, P, IR	[382]
Cp*$_2Cl_2Rh_2$[*cyclo*-(4-MeC_6H_3)(μ-S)$_2C_2B_9H_{10}{}^+$)[*cyclo*-(4-MeC_6H_3)(μ-S)$_2C_2B_9H_{10}{}^-$	S, X, H, B, C, R(catalytic hydrogenation and cyclopropanation of alkenes)	[382]
Cp*$_2ClHRh_2$[*cyclo*-(4-MeC_6H_3)(μ-S)$_2C_2B_9H_{10}{}^+$)[*cyclo*-(4-MeC_6H_3)(μ-S)$_2C_2B_9H_{10}{}^-$	S, X, H, B, C, R(catalytic hydrogenation and cyclopropanation of alkenes)	[382]
$Me_2C_2B_9H_{10}$-(μ-H)$_2$AuIrH$(PPh_3)_3$	S, X, H, B, P	[462]
$(Ph_3P)_2$Ir[μ-7,8-S$(CH_2)_n$S-$(C_2B_9H_{10})]^-$ *n* = 2,3,4	S, H, B	[477]
[*cyclo*-EIr_2Cp*(C_8H_{12})E]$C_2B_9H_9$-μ(Ir,B)-OMe E = S, Se	S, X, H, B, IR	[473]
[*cyclo*-SCp*IrRh(C_8H_{12})S]$C_2B_9H_9$-μ(Ir,B)-OMe	S, X, H, B, IR	[473]
[*cyclo*-EIr_2ClCp*(C_8H_{12})E]$C_2B_9H_9$-μ(Ir,B)-OMe E = S, Se	S, X, H, B, IR	[473]
[*cyclo*-SRh(C_8H_{12})CoCp*S]$C_2B_9H_{10}$	S, X, H, B, IR	[479]
Cp*IrRu(C_8H_{12})(μ-S)$_2$$(C_2B_9H_{10})$	S, H, B, IR	[454]
Cp*IrRu(C_8H_{12})(μ-S)$_2$(OMe)$(C_2B_9H_9)$	S, H, B, IR	[454]
[*cyclo*-(Ph_2P-RhCp*-SO_2)$C_2B_9H_9$-3-OMe B-O-Rh	S, X, H, B, P, IR	[480]
[*cyclo*-(Ph_2P-IrCp*(L)-S)$C_2B_9H_9$ L = CO, PPh_3	S, X(CO), H, B, P, IR	[480]
(*cyclo*-Ph_2P═S-IrLCp*-S)$C_2B_9H_9$ L = *n*-$C_4H_9PPh_2$	S, X, H, B, P, IR	[583]
[EtO(O)CCH_2S]$_2C_2B_9H_9$-3-CH[C(O)OEt]CoCp 2S→Co	S, X, H, C, IR, MS	[590]
bicyclo-CpCo(CH═CFc)[CH_2═C(O)Fc]S_2—$C_2B_9H_{10}$ Fc = CpFeC_5H_4	S, X, H, B, C, IR, MS	[597]
$C_2B_9H_8$-μ(2,3)-S_2-Cp*Rh-Rh(PPh_3)L L = PPh_3, CO Rh–B(10)	S, X(CO), H, B, C	[644]
$C_2B_9H_8$-10-OH-μ(2,3)-S_2-Cp*Rh-Rh(PPh_3)(CO)	S, X, H, B, C	[644]
$C_2B_9H_8$-μ(2,3)-S_2-Cp*Rh-Rh(PPh_3)L L = PPh_3, CO Rh-H(10)	S, X(CO), H, B, C	[644]
$C_2B_9H_8$-10-OMe-μ(2,3)-S_2-Cp*Rh-Rh(PPh_3)(CO) Rh-OMe	S, X, H, B, C	[644]
$C_2B_9H_8$-10-Cl-μ(2,3)-S_2-Cp*Rh-Rh(μ-Cl)(PPh_3)L L = PPh_3, CO Rh-Cl	S, X(CO), H, B, C	[644]
$(NC_5H_5-CN_4)$Ir[NC_5H_5-C_6H_4]-*nido*-7,8-$C_2B_9H_{10}^-$ intracellular O_2 sensor/hypoxia imaging	S, H, B, C, MS, E, UV, phosphorescence/ luminescence	[646]
Ni*, Pd, *Pt		
(S-CH_2CH_2-S)$C_2B_9H_{10}NiCl_2^-$	S, H, IR	[481]
[S-CH_2CH_2-N(Ts)CH_2CH_2-S-$C_2B_9H_{10}$]$NiCl_2^-$	S, H, IR	[481]
[S-$(CH_2)_2$-S]$C_2B_9H_{10}$Ni$(Cl)_2^-$	S, IR	[459]
[S-$(CH_2CH_2O)_3$]CH_2CH_2-S-$C_2B_9H_{10})_2Ni_2(Cl)_2$	S, IR	[481]
[S-$(CH_2CH_2S)_3$]CH_2CH_2-S-$C_2B_9H_{10})_2Ni_2(Cl)_2$	S, IR	[481]
[S-$(CH_2CH_2O)_2$]CH_2CH_2-S-$C_2B_9H_{10})_2$Ni	S, IR	[481]
(THF)Ni[(μ-O═$PPh_2)_2C_2B_9H_{10}]_2$	S, X, H, C, IR	[385]
μ(7,8)-SS[CH_2C(O)OEt]$C_2B_9H_{10}$-Pd$(PPh_3)_2$	S, X, H, B, IR, P	[398]

Compound	Information	References
$(PPh_2)RC_2B_9H_{10}$-11-$PPh_2Pd(Cl)PPh_3$ R = Me, H, Ph	S, X (R = Me), H, B, P, IR	[483]
$[S(CH_2CH_2O)_3CH_2CH_2S$-$C_2B_9H_{10}]_2Pd$	S, X, B, IR	[481]
$(S$-CH_2CH_2-$S)C_2B_9H_{10})_2Pd$	S, IR	[481]
$(S$-$(CH_2CH_2S)_4$-$C_2B_9H_{10})_2Pd(Cl)_2$	IR, H	[481]
$(S$-CH_2CH_2-$N(Ts)CH_2CH_2$-S-$C_2B_9H_{10})_2Pd(Cl)_2$	S, IR	[481]
$(S$-CH_2CH_2-O-CH_2CH_2-S-$C_2B_9H_{10})_2Pd$	S, IR	[481]
$Pd[7,8$-$(Ph_2P)_2C_2B_9H_{10}]_2$	S, H, B, IR,P	[110]
$(Ph_3P)PdCl[7,8$-$(Et_2P)_2C_2B_9H_{10}]_2$	S, H, B, IR,P	[110]
$Pd[7,8$-$(Et_2P)_2C_2B_9H_{10}]_2$	S, H, B, IR,P	[110]
$Pd_2(\mu$-$Cl)_2[7,8$-$\{(OEt_2)P\}_2C_2B_9H_{10}]_2$	S, H, B, IR,P	[110]
$(S$-$(CH_2CH_2S)_4$-$C_2B_9H_{10})Pd(Ph_3P)(Cl)$	S, IR, H	[481]
$(S$-CH_2CH_2-$N(Ts)CH_2CH_2$-S-$C_2B_9H_{10})Pd(Ph_3P)(Cl)$	S, IR, H	[481]
$Cl_2Pd_2\{2,6$-$[(C(O)OMe)C_2B_9H_{10}$-8-S-CH_2-$]_2C_5H_3N\}^-$	S, IR, H, B, MS	[431]
$Cl(L)Pd(\mu$-$PR_2)_2$-7,8-$C_2B_9H_{10}$ L = PPh_3,$PMePh_2$	S, H, B, IR,P	[110]
$[(\mu - Cl)Pd(7,8 - C_2B_9H_{10})]_2^-$	S	[280]
$Cl(NC_5H_4)Ni(Ph_2P)_2]C_2B_9H_{10}$	S, X, H, C, IR	[616]
$Ni[(Ph_2P)_2C_2B_9H_{10}][(Ph_2PO)_2C_2B_9H_{10}]$	S, X, H, C, IR	[616]
$Pd_2(\mu$-$SO_3CF_3)_2[(Ph_2P)_2C_2B_9H_{10}]_2$	S, X, H, C, IR	[585]
Cu, Ag, Au		
$\mu(7,8)$-$\{(PPh_3)[C(O)Me_2]Cu(PPh_2)_2\}C_2B_9H_{10}$	S, X	[104]
$Cu[(\mu$-$O{=}PPh_2)_2C_2B_9H_{10}]_2$	S, X, H, C, IR	[385]
$Au_9M_4Cl_4(PMePh_2)_8]^+$ $C_2B_9H_{12}^-$ M = Au, Ag, Cu	S, X, H, B, MS	[349]
$(S$-$(CH_2)_2$-$S)C_2B_9H_{10}CuCl_2^-$	S, IR	[459]
NMe_4^+ $Ag(\mu - SCH_2CH_2S - C_2B_9H_{10})_2^-$	S, X, H, B, IR	[490]
$\mu(7,8)$-$[(PPh_3)Ag(SCH_2CH_2$-O-$CH_2CH_2S)]C_2B_9H_{10}$	S, X, H, B, IR	[487]
$\{Ag[\mu(SCH_2CH_2$-O-CH_2CH_2-O-CH_2CH_2-O-$CH_2CH_2S)$-$C_2B_9H_{10}]\}_n$ polymer	S, X, H, B, IR	[489]
$(C_2B_9H_{10})_2$-9,9′-$[Ag(SbPh_3)_2]_2$	S, X, H, B, IR	[491]
$(C_2B_9H_{10})_2$-9,9′-$[Ag(AsPh_3)_2]_2$	S, B, H, IR	[491]
$LAg(Ph_2P)_2C_2B_9H_{10}$ L = bipyridine, PPh_3	S, H, B, P, IR	[109]
$LAg(Ph_2P)_2C_2B_9H_{10}$ L = PPh_2, Me, PPh_3	S (undergraduate lab experiment), P, H, IR	[271]
(bipyridine)$Ag^+\mu(7,8)$-$SCH_2CH_2S]C_2B_9H_{10}^-$	S, IR, H, B	[489]
Ag^+ $[\mu(7,8)$-SCH_2CH_2-O-CH_2CH_2-O-$CH_2CH_2S]C_2B_9H_{10}^-$	S, IR, H, B	[489]
$(Ph_3P)Ag^+$ $Me_2C_2B_9H_{10}^-$	S, IR, H, B	[489]
(bipyridine)Ag^+ $(SCH_2CH_3)_2C_2B_9H_{10}^-$	S, IR, H, B	[489]
(bipyridine)Ag^+ $Me_2C_2B_9H_{10}^-$	S, IR, H, B	[489]
$[(BrAu)Ph_2P]_2C_2B_9H_{10}$	S, X, P	[494]
$LAu[P(CHMe_2)_2]_2C_2B_9H_{10}$ L = Ph_3P, Cl_2	S, X(Cl_2), H, B, P, IR	[109]

Continued

Compound	Information	References
$(Ph_3P)Au[P(EtO)_2]_2C_2B_9H_{10}$	S, H, B, P, IR	[109]
$(Ph_3P)_2Au_2(PPh_2)_2C_2B_9H_{10}$	S, H, B, P, IR	[109]
$C_2B_9H_{10}$-9-SMe_2-μ(10,11)-Au(PPh_3)	S, X, H, B, IR	[495]
$Me_2C_2B_9H_9$-9-PPh_3-(μ-H)-10-$AuPPh_3$	S, X, H, B, C, P	[496]
$Me_2C_2B_9H_{10}$-(μ-H)$_3Au_3(PPh_3)_3$	S, X, H, B, C, P	[496]
$(PPh_2)_2(C_3H_6)Au_2[(PPh_2)_2C_2B_9H_{10}]_2$	S, X, H, B, P, IR, C	[106]
$(Ph_3As)_2Au_4[(μ\text{-}PPh_2)_2(C_2B_9H_{10})]_2$	S, X, H, B, P, MS	[497]
$(C_6H_4OMe)_2Au_4[(μ\text{-}PPh_2)_2(C_2B_9H_{10})]_2$ R = Ph, *p*-C_6H_4Me, *p*-C_6H_4OMe	S, X(*p*-C_6H_4OMe)	[498]
[1,2-(μ-$Ph_2P)_2C_2B_{10}H_{10}$]Au[(μ-$Ph_2P)_2C_2B_9H_{10}$]	S, H, B, P, MS, IR	[497]
[1,2-(μ-$Ph_2P)_2C_2B_{10}H_{10}$]Au[(μ-$Ph_2P)_2C_2B_9H_{10}$]·0.5 CH_2Cl_2·0.5H_2O	X	[499]
Closo-(μ-S_2-7,8-$C_2B_{10}H_{10}$)-*nido*-Au(μ-S_2-$C_2B_9H_{10})^-$	S, B, C, H	[61]
$Au(\mu - S_2 - 7,8 - C_2B_9H_{10})_2{}^-$	S, B, C, H	[61]
Ph_3PAu-7,8-$Me_2C_2B_9H_9{}^-$	S, H, P, B, C	[463]
7,8-[$(CHMe_2)_2PAu(PPh_3)P(CHMe_2)_2]C_2B_9H_9{}^-$	S, variable-temp. luminescence	[501]
7,8-[$Ph_2PAu(PPh_3)PPh_2]C_2B_9H_9^-$	S, variable-temp. luminescence	[501]
$(Me_2C_2B_9H_{10})AuW(CO)_2Cp(μ\text{-}CC_6H_3Me_2)$	S, H, B, C, IR	[502]
$(Me_2C_2B_9H_9)_2Au_2(CO)_2MCp(μ\text{-}CC_6H_4Me)^-$ M = W, Mo	S, H, B, C, IR	[502]
$(Me_2C_2B_9H_{10})_2Au_2(CO)_2MCp(μ\text{-}CC_6H_4Me)$ M = Mo, W	S, X(W), H, B, C, IR	[502]
7,8-[*cyclo*-Ph_2P-Au($H_2C_3N_2RR'$)-$PPh_2]C_2B_9H_{10}$ R, R′ = $CHMe_2$, $SCHMe_2$, $Me_3C_6H_2$, Me, CH_2Ph, 2-picolyl bicyclic ligands as modulators of luminescence in 3-coordinate gold complexes	S, UV, luminescence emission	[614]
[(μ-$PR_2)_2C_2B_9H_{10}]_2Au[Ph_2P$-X-$PPh_2$] R = Ph, $CHMe_2$ X = $(CH_2)_3$, $(C_5H_4)_2Fe$	S, X($CH_2)_3$,Ph), H, P, luminescence	[617]
$H_{10}B_{10}C_2(μ\text{-}S)_2M(–M'PPh_3)$-7,8-(μ-$PPh_2)_2$-7,8-*nido*-$C_2B_9H_{10}$ M = Pd, Pt, Ni; M′ = Cu, Ag, Au heterobimetallic d^8–d^{10} interactions	S, X(Pd, Au; Pt, Au; Pd, Ag; Pd), H, P, MS, diffuse reflectance UV, emission	[638]
Me-$CB_{10}H_{10}C$-PPh_2-M[*nido*-7,8-(μ-$PPh_2)_2C_2B_9H_{10}$] M = Ag, Au	S, X(Ag), H, P, IR, UV(luminescence emission)	[639]
Zn, Hg		
$K^+{}_4$ M(porphyrin)(C_6H_4-*m*-O-CH_2-*nido*-$C_2B_9H_{10}{}^-)_4$ M = 2H, Zn (prepared for BNCT)	S	[277]
$K^+{}_2$ M(porphyrin-[C(O)OH]$_2$)[CH═CH-*nido*-$C_2B_9H_{10}{}^-]_2$ M = 2H, Zn prepared for BNCT	S	[277]
Porphyrin derivatives and Zn complexes prepared for BNCT	S, X, distribution in EMT-6 tumor-bearing mice	[333]
$Ph_2C_2B_9H_9$-Hg($PPh_3)_2$	X	[503]
Hg($C_2B_9H_{10}$-9-$NC_5H_5)_2$	S, H, B, IR	[195]
μ(7,8)-($SCH_2S)C_2B_9H_{10}$-Hg(PPh_3)	S, X, H, B, IR	[505]
$(Ph_3P)Hg[7,8\text{-}(μ\text{-}S(CH_2)_2S)C_2B_9H_9]^-$	S, H, B, IR	[505]
$(Ph_3P)Hg[7,8\text{-}(Me_2S)_2C_2B_9H_9]^-$	S, H, B, IR	[505]
9-(1,2-$C_2B_{10}H_{11}$)-Hg-10-(7-R-7,8-$C_2B_9H_{10})^-$ R = H, Ph, $CHMe_2$	S, H, B	[507]

Compound	Information	References
10-PhHg-7,8-$RC_2B_9H_{10}^-$ R = H, Ph, $CHMe_2$	S, H, B	[507]
exo,nido-Cl[$(C_6H_5)_3P]_2$Ru-(μ-H)$_3$-$C_2B_9H_8$-9-Hg-(1,2-$C_2B_{10}H_{11}$)	S, X, H, B, P	[453]
$C_2B_9H_{11}$-10-Hg-9-[3,1,2-CpCo($C_2B_9H_{10}$)]	S, H, B	[508]
μ(H)$_3$-Ru[P$(C_6H_5)_3]_2$Cl-$C_2B_9H_8$-10-Hg-9-[3,1,2-CpCo($C_2B_9H_{10}$)]	S, B, P	[508]
Lanthanon and yttrium complexes		
[La$(BH_4)_2]_2(C_2B_9H_{11})^-$·*n*$C_4H_8O$	S	[547]
Er$(C_2B_9H_{11})_3^-$·7C_4H_8O	S	[547]
Other Experimental Studies		
Reactivity and kinetics		
$Me_2C_2B_9H_{10}$-9-Fe(CO)$_2$Cp	Reaction with Lewis bases	[440]
$C_2B_9H_{12}^-$ and derivatives (I, OH, SH, $CHMe_2$, Cl, Br, μ-S)	Chromatographic separation	[512]
$C_2B_9H_9$-5,6,10-(μ-H)$_3$-RuCl$(PPh_3)_2$	Reaction with Br_2	[443]
K^+ $Me_2C_2B_9H_{10}^-$	pK_a	[513]
$(Me_2NCH_2)C_2B_9H_{11}^-$	Ni complexation	[371]
	Benzylation	[167]
$C_2B_9H_{10}$-3-R^{2-} R = Et, Ph	B insertion	[94]
$R_2C_2B_9H_{10}$-L L = Me_2S, Me_2SCH_2, C_6H_5N, $C_6H_5NCH_2$; R = H, Me, Ph	Liquid chromatographic separation of enantiomers, OR	[516]
$Ph_2C_2B_9H_8$-3-Et^{2-}	Ni(dppe)Cl_2 → *closo*-NiC_2B_9 isomers	[282]
$(HOCH_2)_2C_2B_9H_{10}^-$	$CoCl_2$ → Co complex	[279]
Catalysis		
Cp*$_2$MeZr-$C_2B_9H_{12}$	Olefin polymerization catalysis	[435]
[$(Ph_2P)_2C_2B_9H_{10}]_2$Ru B-H-Ru	Catalysis of Kharasch addn of CCl_4 to olefins	[519]
$(Ph_3P)_2$Rh(μ-Ph_2P)(μ-H)-$RC_2B_9H_{10}$ R = H, Me	Cyclopropanation catalysis	[520]
$(Ph_3P)_2$Rh-μ-$(CH_2)_3$-7,8-$C_2B_9H_{10}$	Catalysis of hydrosilanolysis of alkenyl acetates	[522]
Other applications		
$C_2B_9H_{12}^-$	Ni-B electroplates with low B content	[528]
	Ni-B alloy electroplates	[529]
$C_2B_9H_{11}$-9-SMe^-	Electrophoresis; ion mobility; chiral separation)	[530]
$C_2B_9H_{11}$-5-Br^-	Electrophoresis; ion mobility; chiral separation)	[530]
$C_2B_9H_{10}$-thymidine$^-$ for BNCT targeting tumor cells	Phosphoryl transfer assay	[74]
(thymidine)$C_2B_9H_{10}^-$ for BNCT targeting tumor cells	Phosphoryl transfer assay	[74]
(*nido*-C_2B_9)$_4$porphyrins	Toxicity; DNA damage; light activation; sensitizer for BNCT; photodynamic therapy of tumors	[534]
At-labeled derivatives	For astatine labeling of proteins	[285]
HO(O)C$(CH_2)_2C_2B_9H_{10}X^-$ X = H, ^{131}I, ^{211}At	*In vivo* studies of radioiodinated and astatinated derivatives for cancer therapy	[535]
$(H_3NC_6H_4)C_2B_9H_{10}X^-$	*In vivo* studies of radioiodinated and astatinated derivatives for cancer therapy	[535]

Continued

Compound	Information	References
$\{\mu\text{-}[m\text{-}C_6H_4(CH_2)_2]C_2B_9H_{11})(C_2B_9H_{10}X)\}^{2-}$ X = H, ^{131}I, ^{211}At "Venus flytrap" complexes	*In vivo* studies of radioiodinated and astatinated derivatives for cancer therapy	[535]
DTPA·$\{\mu\text{-}[m\text{-}C_6H_4(CH_2)_2]C_2B_9H_{11})(C_2B_9H_{10}X)\}^{2-}$ X = H, ^{131}I, ^{211}At "Venus flytrap" complexes	*In vivo* studies of radioiodinated and astatinated derivatives for cancer therapy	[535]
DTPA·$C_2B_9H_{11}X^-$ X = H, ^{131}I, ^{211}At "Venus flytrap" complexes	*In vivo* studies of radioiodinated and astatinated derivatives for cancer therapy	[535]
Exo, nido-$[Ph_2P(CH_2)_4PPh_2]$ClRu-7,8-$Me_2C_2B_9H_{10}$	Controlled synthesis of poly(methyl methacrylate) with amines	[537]
Theoretical Studies		
Molecular and electronic structure calculations		
$C_2B_9H_{11}^-$ $C_7H_6^+$	*Ab initio* face H—double minimum geometry optimization	[121]
$C_2B_9H_{10}$-9-SMe_2^-	Electron density distribution	[411]
$C_{10}H_6(NMe_2)_2^+$ $C_2B_9H_{12}^-$	GIAO	[138]
cyclo-$[(CH_2)_2$-S-$(CH_2)_2]$O-$C_2B_9H_{10}^-$	Molecular modeling [CHARMm]	[542]
$C_2B_9H_{11}^-$ $C_7H_6^+$ tropylium	*Ab initio* charge-transfer	[543]
$C_2B_9H_{11}$-9-Me^-	GIAO; NMR + geometry	[118]
[*cyclo*-C(=NH_2)CBrC(=NH_2)$^+$]$C_2B_9H_{11}^-$ iminium salt	DFT: molecular structure	[665]
$(PH_3)Au(Ph_2P)_2C_2B_9H_{10}$ (model)	DFT population analysis	[386]
$(R_3)_2Au_4[(\mu\text{-}PPh_2)_2(C_2B_9H_{10})]_2$ R = Ph, *p*-C_6H_4Me, *p*-C_6H_4OMe	*Ab initio*	[498]
[*cyclo*-$PPh_2Au_2(C_6F_5)(PR_3)PPh_2$]$C_2B_9H_{10}$ PR_3 = PPh_3, PPh_2Me, PPh_2(*p*-C_6H_4Me), P(*p*-C_6H_4Me)$_3$	DFT, TDDFT: singlet-triplet transitions	[599]
$H^+\{[(Me_2CH)_2PO]_2C_2B_9H_{10}\}^-$	DFT, P–O···H$^+$···O–P interactions	[613]
NMR calculations		
$C_2B_9H_{12}^-$	*Ab initio* GIAO	[122]
PSH^+ $C_2B_9H_{12}^-$ PS = proton sponge = $(Me_2N)_2C_{10}H_6$	H NMR *ab initio*	[90]
$(PR_2)R'C_2B_9H_{10}^-$ R = Et,$CHMe_2$, Ph; R′ = H, Me, Ph	Calculated ^{31}P shifts; *nido* clusters show +I[e donor]effect, *closo* show −I[e acceptor]effect, pK_a)	[67]
Reactivity calculations		
$(SO_2NH_2)C_2B_9H_{11}^-$	QM/MM interaction with human carbonic anhydrase	[625]
$RC_2B_9H_{10}$-5-C≡C-(C_5H_4)FeCp$^-$	DFT: redox potentials	[656]

[a]*S, synthesis; X, X-ray diffraction; H, ^{1}H NMR; B, ^{11}B NMR; C, ^{13}C NMR; F, ^{19}F NMR; N, ^{14}N NMR; P, ^{31}P NMR; 2d, two-dimensional (COSY) NMR; IR, infrared data; MS, mass spectroscopic data; UV, UV-visible data; E, electrochemical data; ESR, electron spin resonance data; MAG, magnetic susceptibility; COND, electrical conductivity; OR, optical rotation; XPS, X-ray photoelectron spectra.*