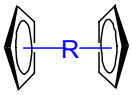
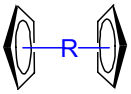
Compound		Bond Dissociation Enthalpy (kcal/mol)		
		Bond (C-Y)	Energy	Theory Level
	R = Li	R-Cp	82.3	CCSD(T)/B//BP86/A
			79.0	BP86/A
	R = Na		58.6	CCSD(T)/B//BP86/A
			54.4	BP86/A
	R = K		57.9	CCSD(T)/B//BP86/A
			50.4	BP86/A
	R = Rb		55.3	CCSD(T)/B//BP86/A
			50.4	BP86/A
	R = Cs		60.0	CCSD(T)/B//BP86/A
			56.1	BP86/A
	R = B		87.3	CCSD(T)/B//BP86/A
			94.5	BP86/A
	R = Al		87.4	CCSD(T)/B//BP86/A
			88.4	BP86/A
	R = Ga		78.3	CCSD(T)/B//BP86/A
			79.2	BP86/A
	R = In		78.0	CCSD(T)/B//BP86/A
			76.7	BP86/A
	R = Tl		66.0	CCSD(T)/B//BP86/A
			67.0	BP86/A
	R = Be (D_{5d})	R-$(Cp)_2$	153.9	CCSD(T)/B//BP86/A
			146.6	BP86/A
	R = Be (C_s)		154.0	CCSD(T)/B//BP86/A
			146.3	BP86/A
	R = Mg (D_{5d})		121.1	CCSD(T)/B//BP86/A
			112.5	BP86/A
	R = Mg (D_{5h})		121.0	CCSD(T)/B//BP86/A
			112.5	BP86/A
	R = Ca (D_{5d})		154.9	CCSD(T)/B//BP86/A
			155.2	BP86/A
	R = Sr (C_1)	R-$(Cp)_2$	149.3	CCSD(T)/B//BP86/A
			145.3	BP86/A
	R = Ba (C_s)		161.1	CCSD(T)/B//BP86/A
			154.3	BP86/A
	R = Zn (C_s)		69.6	CCSD(T)/B//BP86/A
			60.9	BP86/A
	R = Si (C_2)		124.3	CCSD(T)/B//BP86/A
			131.0	BP86/A
	R = Ge (C_s)		117.4	CCSD(T)/B//BP86/A
			123.4	BP86/A
	R = Sn (C_s)		111.3	CCSD(T)/B//BP86/A
			116.0	BP86/A
	R = Pb (C_1)		106.2	CCSD(T)/B//BP86/A
			107.9	BP86/A

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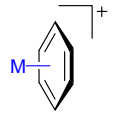
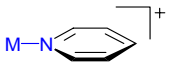
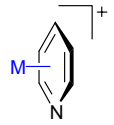
Compound		Bond Dissociation Enthalpy (kcal/mol)		
		Bond (C-Y)	Energy	Theory Level
Fe(*bz*)$^+$ 	M = Fe	Arene-M$^+$	207.5 239.2 235.8	Threshold-CID *m*-PW1PW91 B3LYP
Fe(*py*)$^{\pm}$	M = Fe		223.7 209.2 206.7	Threshold-CID Kinetics Method Kinetics Method
Fe(σ–*py*)$^+$ 	M = Fe		228.6 255.1	*m*-PW1PW91 B3LYP
Fe(π–*py*)$^+$ 	M = Fe		186.0 185.7	*m*-PW1PW92 B3LYP

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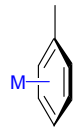
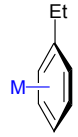
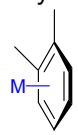
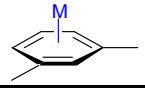
Benzene-M 	M = Cr+ M = Fe+ M = Co+	Arene-M	40.6 49.6 61.1	
Toluene-M 	M = Cr+ M = Fe+ M = Co+		42.6 51.8 63.4	
Ethylbenzene-M 	M = Cr+ M = Fe+ M = Co+		43.5 52.9 64.2	
o-xylene-M 	M = Cr+ M = Fe+ M = Co+		44.3 53.6 65.2	
m-xylene-M 	M = Cr+ M = Fe+ M = Co+		44.3 53.9 65.3	

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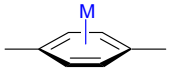
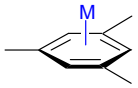
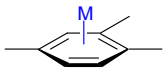
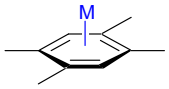
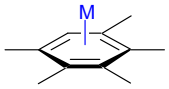
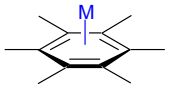
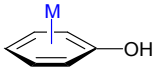
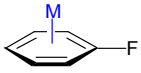
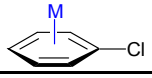
Compound		Bond Dissociation Enthalpy (kcal/mol)		
		Bond (C-Y)	Energy	Theory Level
p-xylene-M 	M = Cr+	Arene-M	44.3	
	M = Fe+		53.8	
	M = Co+		65.3	
Mesitylene-M 	M = Cr+		45.9	
	M = Fe+		55.2	
	M = Co+		66.8	
1,2,4-trimethyl-benzene-M 	M = Cr+		45.7	
	M = Fe+		55.3	
	M = Co+		66.9	
Durene-M 	M = Cr+		47.1	
	M = Fe+		56.6	
	M = Co+		68.2	
Penta-methylbenzene-M 	M = Cr+		48.2	
	M = Fe+		57.8	
	M = Co+		69.7	
Hexa-methylbenzene-M 	M = Cr+		49.0	
	M = Fe+		58.9	
	M = Co+		70.9	
Phenol-M 	M = Cr+		41.0	
	M = Fe+		50.0	
	M = Co+		61.0	
Fluorobenzene-M 	M = Cr+		36.2	
	M = Fe+		45.1	
	M = Co+		56.2	
Chlorobenzene-M 	M = Cr+		37.1	
	M = Co+		57.4	

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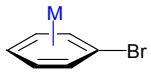
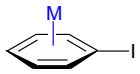
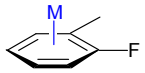
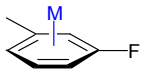
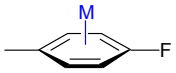
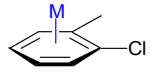
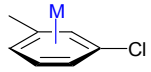
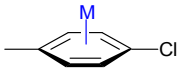
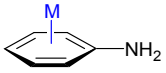
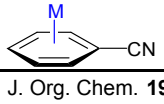
Compound		Bond Dissociation Enthalpy (kcal/mol)		
		Bond (C-Y)	Energy	Theory Level
Bromobenzene-M 	M = Co+	Arene-M	58.4	
Iodobenzene-M 	M = Co+		60.1	
o-fluorotoluene-M 	M = Cr+ M = Fe+ M = Co+		38.8 47.8 58.8	
m-fluorotoluene-M 	M = Cr+ M = Fe+ M = Co+		38.5 47.4 58.6	
p-fluorotoluene-M 	M = Cr+ M = Fe+ M = Co+		38.5 47.7 58.6	
o-chlorotoluene-M 	M = Co+		59.7	
m-chlorotoluene-M 	M = Co+		59.6	
p-chlorotoluene-M 	M = Co+		59.6	
Aniline-M 	M = Cr+ M = Fe+ M = Co+		44.8 54.0 64.8	
Benzonitrile-M 	M = Cr+ M = Fe+ M = Co+		47.0 47.8 57.8	

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Compound		Bond Dissociation Enthalpy (kcal/mol)		
		Bond (C-Y)	Energy	Theory Level
F_3B—R	R = CO	M-R	2.5	MP2/II+//MP2/II
	R = $C(NH_2)_2$		39.8	
Cl_3B—R	R = CO		1.8	
	R = $C(NH_2)_2$		56.7	
F_3Al—R	R = CO		13.7	
	R = $C(NH_2)_2$		55.5	
Cl_3Al—R	R = CO		12.8	
	R = $C(NH_2)_2$		59.1	
F_3Ga—R	R = CO		11.3	
	R = $C(NH_2)_2$		56.8	
Cl_3Ga—R	R = CO		8.6	
	R = $C(NH_2)_2$		55.1	
F_3In—R	R = CO		13.0	
	R = $C(NH_2)_2$		57.5	
Cl_3In—R	R = CO		10.9	
	R = $C(NH_2)_2$		55.4	
F_4Ti—R	R = CO		35.7	
	R = $C(NH_2)_2$		21.2	
Cl_4Ti—R	R = CO		2.9	
	R = $C(NH_2)_2$		39.0	

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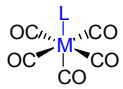
			(kJ/mol)
$Cr(CO)_5L$	L = OH_2	Cr-CO_{ax}	242
	L = OC	Cr-CO_{ax}	230
	L = CO	Cr-L	183
		Cr-CO_{ax}	183
	L = NH_3		233
	L = PH_3		213
	L = PMe_3		214
	L = N_2		205
(staggered C_{2v})	L = CF_2	Cr-L	211
		Cr-CO_{ax}	177
(staggered C_{2v})	L = CCl_2	Cr-L	223
		Cr-CO_{ax}	166
	L = CS	Cr-L	249
		Cr-CO_{ax}	167
(staggered C_{2v})	L = CH_2	Cr-L	344
		Cr-CO_{ax}	164
(eclipsed C_{2v})	L = CH_2	Cr-L	341
		Cr-CO_{ax}	166
	L = NO+	Cr-CO_{ax}	150
$Mo(CO)_5L$	L = OH_2	Mo-CO_{ax}	253
	L = OC		242
	L = NH_3		231
	L = PH_3		199
	L = PMe_3		194
	L = N_2		202
	L = CO	Mo-L	163
		Mo-CO_{ax}	163

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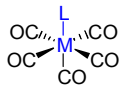
Compound			Bond Dissociation Enthalpy (kJ/mol)		
			Bond (C-Y)	Energy	Theory Level
$Mo(CO)_5L$	$L = CF_2$	(staggered C_{2v})	Mo-L	191	
			Mo-CO_{ax}	153	
	$L = CCl_2$	(staggered C_{2v})	Mo-L	205	
			Mo-CO_{ax}	142	
	$L = CS$		Mo-L	228	
			Mo-CO_{ax}	142	
	$L = CH_2$	(staggered C_{2v})	Mo-L	321	
			Mo-CO_{ax}	128	
	$L = NO^+$		Mo-CO_{ax}	140	
$W(CO)_5L$	$L = OH_2$		W-CO_{ax}	293	
	$L = OC$		W-CO_{ax}	278	
	$L = NH_3$		W-CO_{ax}	269	
	$L = PH_3$		W-CO_{ax}	233	
	$L = PMe_3$		W-CO_{ax}	227	
	$L = N_2$		W-CO_{ax}	233	
	$L = CO$		W-L	193	
			W-CO_{ax}	193	
	$L = CF_2$	(staggered C_{2v})	W-L	224	
			W-CO_{ax}	184	
	$L = CCl_2$	(staggered C_{2v})	W-L	239	
			W-CO_{ax}	173	
	$L = CS$		W-L	264	
			W-CO_{ax}	173	
	$L = CH_2$	(staggered C_{2v})	W-L	362	
			W-CO_{ax}	159	
	$L = NO^+$		W-L	456	
			W-CO_{ax}	165	
$Cr(CO)_5L$	$L = CH_2$		Cr-L	344	
				351	QR-DFT
				353	CCSD(T)//MP2
	$L = CF_2$			211	
				180	MP2
				223	
	$L = CCl_2$			223	
$Mo(CO)_5L$	$L = CH_2$		Mo-L	321	
				335	QR-DFT
				353	CCSD(T)//MP2
	$L = CF_2$			191	
				162	MP2
	$L = CCl_2$			228	
$W(CO)_5L$	$L = CH_2$		W-L	362	
				380	QR-DFT
				380	CCSD(T)//MP2
	$L = CF_2$			224	
				199	MP2
	$L = CCl_2$			239	

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Compound		Bond Dissociation Enthalpy (kJ/mol)		
		Bond (C-Y)	Energy	Theory Level
			ΔH^o	
$ZnMe_2$		Zn-C	374	
$ZnEt_2$			312	
$ZnPr_2$			337	
$ZnBu_2$			334	

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$U(\eta^5\text{-}C_5Me_5)_2R_2$	R = Me	$U\text{-}R_n$	300	
	R = CH_2Ph		244	
	R = CH_2SiMe_3		307	
$U(\eta^5\text{-}C_5Me_5)_2R(Cl)$	R = Me		312	
	R = CH_2Ph		263	
	R = Ph		358	
$U(\eta^5\text{-}C_5Me_5)_2(OSi^tBuMe_2)(R)$	R = Me		317	
	R = H		342	
$U\{\eta^5\text{-}C_5H_4(SiMe_3)\}_3R$	R = Me		185	
	R = Bu		152	
	R = CH_2SiMe_3		168	
	R = CH_2Ph		149	
	R = $CHCH_2$		223	
	R = C≡C—Ph		363	
	R = I		262, 265.6	
	R = SEt		266	
	R = S^tBu		158	
	R = H		253.7	
$U(\eta^5\text{-}C_5H_4{}^tBu)_3R$	R = H		251.6	
	R = I		246.3	
	R = SEt		252	
$U(C_9H_7)_3R$	R = Me		195	
	R = OCH_2CF_3		301	
	R = I		267	

Leal, J. P.; Marques, N.; Takats, J.*J. Organomet. Chem.* **2001**, *632*, 209–214

			(kcal/mol)
$Ta(CH_2SiMe_3)_5$		Ta-C	44
(alkilydene formation)	D_1	Ta-C	67
		Ta=C	126

Luo, L.; Li, L.; Marks, T.J.*J. Am. Chem. Soc.* **1997**, *119,* 8574-8575

$TaMe_5$	Ta-C	261	237

Simões, J.A.M.; Beauchamp, J.L.*Chem. Rev.* **1990**, *90*, 629-688

Compound		Bond Dissociation Enthalpy (kJ/mol)		
		Bond (C-Y)	Energy	Theory Level
$U(C_9H_6Et)_3R$	R = Me	$U-R_n$	187	
$U(C_9H_6SiMe_3)_3R$	R = SEt		158	
$U(\eta^5-C_5H_5)_3R$	R = $SiPh_3$		156	
	R = $GePh_3$		163	
	R = $SnPh_3$		156	
	R = $Fe(CO)_2(cp)$		129	
	R = $Ru(CO)_2(cp)$		169	
	R = Cp		299	
UR_2	R = C_8H_8		344	
			442	
			190	
	R = C_8H_7Bu		417	
UR_4	R = $MeCO_2$		517	
	R = Cl		422.6	
$UCl_2R(Tp^{Me2})_3$	R = $CH(SiMe_3)_2$		295	
	R = Cp		362	
	R = O^tBu		460.5	
	R = $OCMe_2CH_2COMe$		484.2	
	R = $N(SiMe_3)_2$		334	
	R = (3,5-Me_2pz		293	
$UCl_2R(Tp^{Me2})_3$.thf	R = Thf		21.5	

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Compound		Bond Dissociation Enthalpy (kcal/mol)		
		Bond (C-Y)	Energy	Theory Level
RMe_3	R = Si	C-Me	70.62	HF and NR
			70.46	HF and RESC
			89.30	B3LYP and NR
			89.12	B3LYP and RESC
			86.37	BOP and NR
			86.19	BOP and RESC
	R = Ge		62.99	HF and NR
			62.20	HF and RESC
			80.73	B3LYP and NR
			77.78	B3LYP and RESC
			77.67	BOP and NR
			76.55	BOP and RESC
	R = Sn		53.22	HF and NR
			51.30	HF and RESC
			71.41	B3LYP and NR
			68.84	B3LYP and RESC
			68.91	BOP and NR
			66.15	BOP and RESC
	R = Pb		46.09	HF and NR
			39.87	HF and RESC
			64.57	B3LYP and NR
			56.32	B3LYP and RESC
			62.28	BOP and NR
			53.49	BOP and RESC

Lie, W.; Fedorov, D. G.; Hirao, K.*J. Phys. Chem. A* **2002,** *106,* 7057-7061

	M = Ru	110.2	GGA-BP86 XC
	M = Rh	114.6	GGA-BP86 XC
	M = Pd	113.9	GGA-BP86 XC
	M = Ru	67.1	GGA-BP86 XC
	M = Rh	67.4	GGA-BP86 XC
	M = Pd	58.2	GGA-BP86 XC

Xavier, E. S.; Duarte, H. A.*J. Quant. Chem.* **2003**, *95(2)* , 164-176

Compound	Bond Dissociation Enthalpy (kcal/mol)		
	Bond (C-Y)	Energy	Theory Level

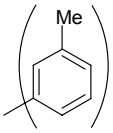
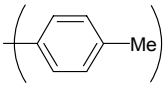
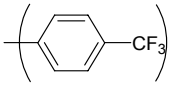
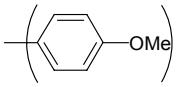
	MC Bond Distance (Å)	M-C	BDE
Cu—C(2)	1.799		90.3
Ni—C(1)	1.624		141.4
Ni—C(3)	1.625		131.2
Fe—C(3)	1.565		155.6
Fe—C(5)	1.628		138.0
Ti—C(3)	1.679		148.6
Ti—C(5)	1.829		126.7

	MC (Å)	CO (Å)	M-C BDE	C-O BDE
Cu—CO(2)	1.903	1.160	15.4	228.2
Ni—CO(1)	1.661	1.167	61.4	223.1
Ni—CO(3)	1.861	1.164	27.5	199.5
Fe—CO(3)	1.698	1.173	47.1	194.6
Fe—CO(5)	1.864	1.166	39.6	204.7
Ti—CO(3)	2.013	1.171	27.7	182.2
Ti—CO(5)	2.034	1.171	44.4	220.7

	MC (Å)	M-C BDE
Cu_5C(2)(5,0)	1.750	93.7
Cu_5C(2)(4,1)	0.05	157.4
Ni_5C(1)(5,0)	1.625	145.8
Ni_5C(1)(4,1)	-	183.8
Ni_5C(3)(5,0)	1.65	149.3
Ni_5C(3)(4,1)	-	189.4
Fe_5C(3)(4,1)	0.50	186.0
Fe_5C(5)(4,1)	0.40	189.9
Ti_7C(3)(7,0)	1.82	129.9
Ti_7C(5)(7,0)	1.79	139.5

	MC (Å)	CO (Å)	M-C BDE	C-O BDE
Cu_5CO(2)(5,0)	1.975	1.160	6.03	215.3
Cu_5CO(2)(4,1)	1.70	1.15	3.03	148.6
Ni_5CO(1)(5,0)	1.70	1.17	22.55	179.7
Ni_5CO(1)(4,1)	.0.02	1.23	26.16	145.3
Ni_5CO(3)(5,0)	1.75	1.17	28.02	181.6
Ni_5CO(3)(4,1)	0.05	1.22	13.65	127.2
Fe_5CO(3)(4,1)	1.05	1.22	17.86	134.8
Fe_5CO(5)(4,1)	0.90	1.25	46.24	159.3
Ti_7CO(3)(7,0)	2.00	1.16	33.16	206.3
Ti_7CO(5)(7,0)	2.05	1.19	40.95	204.4

Sosa, R. M.; Gardiol, P.; Beltrame, G*J. Quant. Chem.* **1997**, *65(5)* , 919-928

Compound		Bond Dissociation Enthalpy (kJ/mol)			
		Bond (C-Y)	Energy	Theory Level	
$Ti(Cp)_2R_2$	R = Me	Ti-Cp	298		
	R = Ph		331		
	R = 		342		
	R = 		341		
	R = 		340		
	R = 		349		
	R = Fe		331		
$Mo(Cp)_2R_2$	R = H	Mo-Cp	251		
	R = Me		166		
$W(Cp)_2R_2$	R = H		305		
	R = Me		221		

Calhorda, M. J.; Dias, A. R.; da Piedade, M. E. M.; Salema, M. S.; Simoes, J. A. M*Organometallics* **1987,** 6, 734-738

				(kcal/mol)	All ZPE corrected
$M(CO)_4$	M = Ni	1.827	M-CO	26.3	BP86/II
		1.821		27.0	BP86/TZP
		1.825, 1.817		25 ± 2	Experimental
	M = Pd	2.016		12.9	BP86/II
		2.016		11.7	BP86/TZP
	M = Pt	1.981		14.2	BP86/II
		1.976		13.5	BP86/TZP

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Compound			Bond Dissociation Enthalpy (kcal/mol)		
			Bond (C-Y)	Energy	Theory Level
					All singlet states, ZPE corrected
$Fe(CO)_4R$	R = CO		Fe-R D_{3h}	39.0	B3LYP/II//B3LYP/II
				45.1	CCSD(T)/II//B3LYP/II
	R = CS	axial	C_{3v}	55.8	B3LYP/II//B3LYP/II
				64.2	CCSD(T)/II//B3LYP/II
		equatorial	C_{2v}	55.4	B3LYP/II//B3LYP/II
				64.2	CCSD(T)/II//B3LYP/II
	R = N_2	axial	C_{2v}	16.5	B3LYP/II//B3LYP/II
				22.9	CCSD(T)/II//B3LYP/II
		equatorial	C_{2v}	15.3	B3LYP/II//B3LYP/II
				22.4	CCSD(T)/II//B3LYP/II
	R = NO^+	axial	C_{3v}	79.2	B3LYP/II//B3LYP/II
				84.8	CCSD(T)/II//B3LYP/II
		equatorial	C_{2v}	92.4	B3LYP/II//B3LYP/II
				105.1	CCSD(T)/II//B3LYP/II
	R = CN^-	axial	C_{3v}	87.0	B3LYP/II//B3LYP/II
				96.5	CCSD(T)/II//B3LYP/II
		equatorial	C_{2v}	81.0	B3LYP/II//B3LYP/II
				89.9	CCSD(T)/II//B3LYP/II
	R = NC^-	axial	C_{3v}	70.7	B3LYP/II//B3LYP/II
				78.6	CCSD(T)/II//B3LYP/II
		equatorial	C_{2v}	64.2	B3LYP/II//B3LYP/II
				72.7	CCSD(T)/II//B3LYP/II
	R = η^2-C_2H_4	axial	C_s	18.3	B3LYP/II//B3LYP/II
				30.6	CCSD(T)/II//B3LYP/II
		equatorial	C_{2v}	25.9	B3LYP/II//B3LYP/II
				39.2	CCSD(T)/II//B3LYP/II
	R = η^2-C_2H_2	axial	C_s	16.9	B3LYP/II//B3LYP/II
				26.9	CCSD(T)/II//B3LYP/II

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Compound			Bond Dissociation Enthalpy (kcal/mol)		
			Bond (C-Y)	Energy	Theory Level
					All singlet states, ZPE corrected
$Fe(CO)_4R$	R = η^2-C_2H_2	equatorial	Fe-R C_{2v}	25.4	B3LYP/II//B3LYP/II
				37.3	CCSD(T)/II//B3LYP/II
	R = CCH_2	axial	C_s	64.7	B3LYP/II//B3LYP/II
				75.7	CCSD(T)/II//B3LYP/II
		equatorial	C_{2v}	70.3	B3LYP/II//B3LYP/II
				83.8	CCSD(T)/II//B3LYP/II
	R = CH_2	axial	C_s	69.1	B3LYP/II//B3LYP/II
				79.6	CCSD(T)/II//B3LYP/II
		equatorial	C_{2v}	75.1	B3LYP/II//B3LYP/II
				87.4	CCSD(T)/II//B3LYP/II
	R = CF_2	axial	C_s	52.2	B3LYP/II//B3LYP/II
				59.8	CCSD(T)/II//B3LYP/II
		equatorial	C_{2v}	55.2	B3LYP/II//B3LYP/II
				64.3	CCSD(T)/II//B3LYP/II
	R = NH_3	axial	C_s	29.9	B3LYP/II//B3LYP/II
				39.1	CCSD(T)/II//B3LYP/II
		equatorial	C_s	23.7	B3LYP/II//B3LYP/II
				33.1	CCSD(T)/II//B3LYP/II
	R = NF_3	axial	C_s	15.3	B3LYP/II//B3LYP/II
				23.5	CCSD(T)/II//B3LYP/II
		equatorial	C_s	12.2	B3LYP/II//B3LYP/II
				20.9	CCSD(T)/II//B3LYP/II
	R = PH_3	axial	C_{3v}	26.8	B3LYP/II//B3LYP/II
				38.9	CCSD(T)/II//B3LYP/II
		equatorial	C_s	25.9	B3LYP/II//B3LYP/II
				36.5	CCSD(T)/II//B3LYP/II
	R = PF_3	axial	C_{3v}	34.1	B3LYP/II//B3LYP/II
				45.2	CCSD(T)/II//B3LYP/II
		equatorial	C_s	34.5	B3LYP/II//B3LYP/II
				44.1	CCSD(T)/II//B3LYP/II
	R = η^2-H_2	axial	C_s	10.3	B3LYP/II//B3LYP/II
				16.5	CCSD(T)/II//B3LYP/II
		equatorial	C_{2v}	12.8	B3LYP/II//B3LYP/II
				18.5	CCSD(T)/II//B3LYP/II

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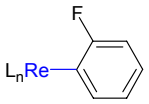
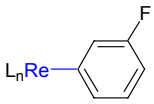
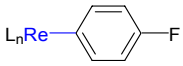
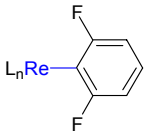
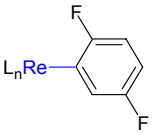
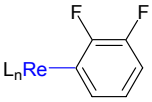
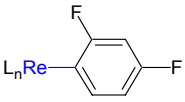
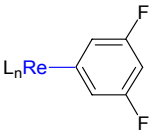
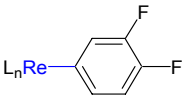
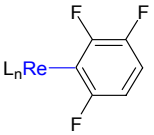
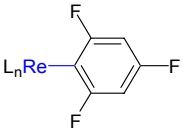
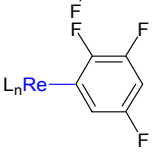
Compound		Bond Dissociation Enthalpy (kJ/mol)		
		Bond (C-Y)	Energy	Theory Level
$Re(\eta^5\text{-}C_5H_5)(CO)_2(H)(R)$	R = Phenyl	Re-R	252.0	ALL using
		Re-H	489.8	Hybrid DFT B3PW91
	R = 	Re-R	276.9	
		Re-H	500.5	
	R = 	Re-R	253.5	
		Re-H	490.6	
	R = 	Re-R	255.3	
		Re-H	494.3	
	R = 	Re-R	300.0	
		Re-H	512.0	
	R = 	Re-R	278.7	
		Re-H	501.2	
	R = 	Re-R	278.1	
		Re-H	500.3	
	R = 	Re-R	279.9	
		Re-H	504.6	
	R = 	Re-R	255.4	
		Re-H	492.0	
	R = 	Re-R	256.1	
		Re-H	494.5	
	R = 	Re-R	301.2	
		Re-H	511.8	
	R = 	Re-R	302.7	
		Re-H	515.5	
	R = 	Re-R	280.4	
		Re-H	501.7	

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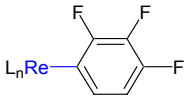
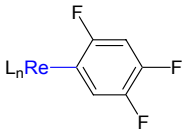
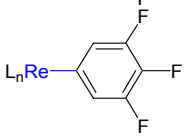
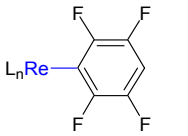
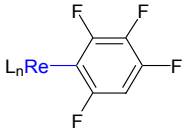
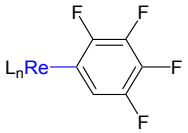
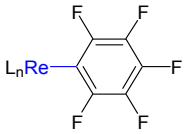
Compound		Bond Dissociation Enthalpy (kJ/mol)		
		Bond (C-Y)	Energy	Theory Level
$Re(\eta^5\text{-}C_5H_5)(CO)_2(H)(R)$	R = 	Re-R Re-H	280.8 503.6	ALL using Hybrid DFT B3PW91
	R = 	Re-R Re-H	281.0 504.8	
	R = 	Re-R Re-H	257.4 495.0	
	R = 	Re-R Re-H	304.7 512.4	
	R = 	Re-R Re-H	304.0 514.7	
	R = 	Re-R Re-H	283.0 504.4	
	R = 	Re-R Re-H	306.7 514.7	

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$Cr(CO)_6$	First Dissociation Enthalpy	M-CO	154
	Mean Dissociation Enthalpy	$M(CO)_6$	107
$Mo(CO)_6$		M-CO	170
		$M(CO)_6$	152
$W(CO)_6$		M-CO	192
		$M(CO)_6$	178
$Fe(CO)_5$		M-CO	174
		$M(CO)_5$	118

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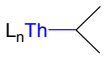
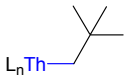
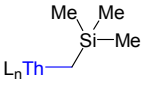
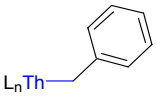
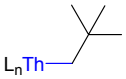
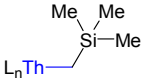
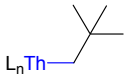
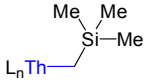
Compound		Bond Dissociation Enthalpy (kJ/mol)		
		Bond (C-Y)	Energy	Bond Enthalpy Terms
$Th(Cp^*)_3R$	R = Me	Th-C	375	351
	R = 		350	351
	R = 		333	326
	R = 		369	365
	R = 		315	358
$Th(Cp^*)_2R_2$	R = Me		339	315
	R = Et		318	308
	R = Bu		307	300
	R = 		302	295
	R = 		335	331
	R = Ph		372	328
$Th(Cp^*)_2(O^tBu)R$	R = Me		349	326
	R = Et		330	320
	R = Bu		316	309
	R = 		321	314
	R = 		345	341
	R = Ph		387	343
$Th(Cp^*)_2[OCH(t\text{-}Bu)_2]Bu$			347	340

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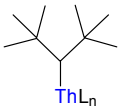
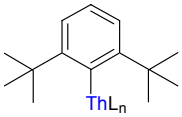
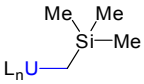
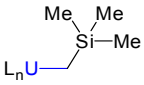
Compound		Bond Dissociation Enthalpy (kJ/mol)		
		Bond (C-Y)	Energy	Bond Enthalpy Terms
$Th(Cp^*)_2(Cl)R$	R = Et	Th-C	313	303
	R = Ph		374	330
	R = Bz		285	328
$Th(Cp^*)_2[(CH_2)_2CMe_2]$			274	
$Th(Cp^*)_2[(CH_2)_2SiMe_2]$			318	
$Th(Cp^*)_2(C_4H_6)$			209	
$Th(Cp^*)_2[CH_2(CMe)_2CH_2]$			188	
$Th(Cp^*)_2(CHCH_2CH_2)_2$			368	
$Th(Cp^*)_2(OR)[C(O)H]$	R = 		345	396
	R = 		351	402
$U(Cp^*)_2[OSi(t\text{-}Bu)Me_2]R$	R = H	U-C	342	
	R = Me		317	293
$U(Cp^*)_2R_2$	R = Me		300	276
	R = Bz		244	287
	R = 		307	303
$U(Cp^*)_2(Cl)R$	R = Me		312	288
	R = Ph		358	314
	R = Bz		263	306
$U(Me_3SiC_5H_4)_3R$	R = Me		185	161
	R = Bu		152	145
	R = 		168	164
	R = Bz		149	192
	R = $CHCH_2$		223	185
	R = CCPh		363	

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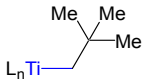
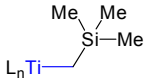
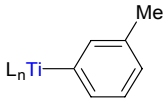
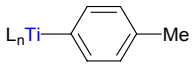
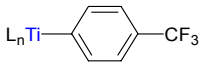
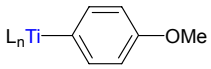
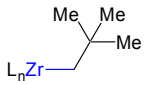
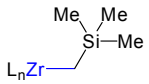
Compound		Bond Dissociation Enthalpy (kJ/mol)		
		Bond (C-Y)	Energy	Bond Enthalpy Terms
TiR_4	R = 	Ti-C	198	191
	R = 		253	249
	R = Bz		201	244
$Ti(Cp)_2R_2$	R = Me		298	274
	R = Ph		332	288
	R = 		343	299
	R = 		342	298
	R = 		341	297
	R = 		350	306
	R = $(\eta^5\text{-}C_5H_4)Fe(\eta^5\text{-}C_5H_5)$		-	278
$Ti(Cp)_2Bz_2$			237	280
$Ti(Cp)_2(Cl)R$	R = Me		-	293
	R = Ph		-	291
$Ti(Cp)_2(Cl)Et$			150	
$Ti(Cp^*)_2R_2$	R = Me		281	257
	R = Ph		280	236
ZrR_4	R = 	Zr-C	249	242
	R = 		310	306
	R = Bz		263	306
$Zr(Cp)_2Me_2$			285	261
$Zr(Cp)_2Ph_2$			300	256
$Zr(Cp^*)_2R_2$	R = Me		284	260
	R = Ph		312	268
$Zr(Cp^*)_2CH_2(CHEt)_2CH_2$			261	-
$Zr(Cp^*)_2CH_2CH_2C_6H_4$-*o*			282	-
$Zr(Cp^*)_2Me_3$			276	252
$Zr(Cp^*)(OC_6F_5)Me_2$			289	265
$Zr(Cp^*)(OC_6F_5)_2Me$			310	286

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Compound		Bond Dissociation Enthalpy (kJ/mol)		
		Bond (C-Y)	Energy	Bond Enthalpy Terms
$Hf(Cp^*)(CH_2CMe_3)_4$		Hf-R	266	259
$Hf(Cp^*)_2R_2$	R = H		346	346
	R = Me		306	282
	R = Bu		274	267
$Hf(Cp^*)_2H_2$			326	326
$Hf(Cp^*)(H)Ph$			350	306
$Hf(Cp^*)Me_3$			294	270
$Hf(Cp^*)(OC_6F_5)Me_2$			300	276
$Hf(Cp^*)(OC_6F_5)_2Me$			309	285
$Hf(Cp^*)(C_5Me_4CH_2CH_2CH_2)H$			243	-
$Hf(Cp^*)(C_5Me_4CH_2C_6H_4\text{-}o)H$			320	-
$Hf(Cp^*)_2(Me)C(O)Me$			298	366

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$Mo(Cp)_2R_2$	R = H	Mo-R	257	-
	R = Me		166	142
	R = Et		156	146
	R = Bu		154	147
$Mo(Cp)_2(C_2H_4)$			59	-
$Mo(Cp)_2(C_2Ph_2)$			120	-
$Mo(Cp)(CO)_3H$			273	-
$Mo(Cp)(CO)_3R$	R = H		282	282
	R = Me		203	179
	R = Et		185	175
	R = C_3H_5		147	195
	R = Bz		154	197

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		W-Cl		347.3
WMe_6		W-R	160	136
$W(Cp)_2R_2$	R = H		311	311
	R = Me		221	197
$W(Cp)_2(I)H$				273
$W(Cp)_2(CO)_3H$			339	339
$W(CO_3)[P(c\text{-}C_6H_{11})_3]_2(H_2)$			40	
$W(CO)_5[C(OMe)Ph]$			359	

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Compound		Bond Dissociation Enthalpy (kJ/mol)		
		Bond (C-Y)	Energy	Bond Enthalpy Terms
		Mn-Mn	159	
$Mn(CO)_5R$	R = H	Mn-R	245	245
	R = Me		187, 192	163, 168
	R = Ph		207	163
	R = Bz		129	172
	R = CH_2F		139	130
	R = CHF_2		144	141
	R = CF_3		182, 203	156, 177
$Mn(CO)_5C(O)R$	R = Me		160, 182, 185	228, 250, 253
	R = Ph		127, 131	193, 197
	R = CF_3		176	222
	R = Et		181	242
	R = Pr		175	236
$Mn(CO)_4(P(C_6H_4OMe\text{-}p)_3(CH_2C_6H_4OMe\text{-}p)$			105	
		Re-Re	187	
$Re(CO)_5Me$		Re-C	220	196

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$Fe(CO)_4H_2$	Fe-H	272	244
$Fe(CO)_4(C_2H_4)$	Fe-C	152	96
$Fe(CO)(1,3\text{-}C_4H_6)_2$			178
$Fe(CO)(1,3\text{-}c\text{-}C_4H_6)_2$			194
$Fe(CO)_3(1,3\text{-}C_4H_6)$			200
$Fe(CO)_3(I)(C_3H_5)$			170
$Fe(CO)_3$(1,3,5,7-cyclooctatetraene)			179
$Fe(CO)_3(C_2H_4)_2$		113	
	Ru-C		
Ru(2,3,7,8,12,13,17,18-octaethylporphyrinato anion)Et_2		91	

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Compound	Bond Dissociation Enthalpy (kJ/mol)		
	Bond (C-Y)	Energy	Bond Enthalpy Terms
$Co(CO)_4H$	Co-C	227	227
$Co_3(CO)_9(CCl)$			114
$Co_3(CO)_9(CBr)$			135
Co(dimethylglyoxime)$_2$(R)CH(Me)Ph			
R = pyridine		113, 117, <90, <89	
R = 4-methylpyridine		115	
R = 4-aminopyridine		120, <97	
R = 4-cyanopyridine		106, <84	
R = imidazole		118, <96	
R = methylpyridine		91	
R = PMe_2Ph		100	
R = PBu_3		87	
R = $PEtPh_2$		81	
R = PPh_3		73	
R = $P(CH_2CH_2CN)_3$		85	
Co(dimethylglyoxime)$_2$(R)Bz			
R = PMe_2Ph		128	171
R = PBu_3		121	164
R = $PEtPh_2$		113	156
R = PPh_3		108	151
R = $P(c\text{-}C_6H_{11})_3$		96	139
Co(octaethylporphyrine)(R)Bz			
R = PMe_2Ph		114	157
R = PBu_3		123	166
R = $PEtPh_2$		110	153
R = PPh_3		100	143
R = $P(c\text{-}C_6H_{11})_3$		124	167
Co(dimethylglyoxime)$_2$(R)CH(CH_2X)COOMe			
R = pyridine, X = H		120	
R = 4-methylpyridine, X = H		123	
R = 4-cyanopyridine, X = H		118	
R = pyridine, X = COOMe		139	
Co(dimethylglyoxime)$_2$(pyridine)R			
R = Me		138	114
R = *i*-Pr		98	99
R = Bz		136	179

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Compound		Bond Dissociation Enthalpy (kJ/mol)		
		Bond (C-Y)	Energy	Bond Enthalpy Terms
Co(*N,N′*-bis(salicylidene)-*o*-phenylenediamine)(pyridine)R				
	R = Pr	Co-C	105	98
	R = *i*-Pr		83	84
	R = CH_2CMe_3		77	70
	R = Bz		91	134
Co[11-hydroxyl-2,10-diethyl-3,9-dimethyl-1,4,8,11-tetraazaundeca-1,3,8,10-tetraen-1-olato](I)R				
	R = CH_2CMe_3		127	120
	R = Bz		109	152
Co(dimethylglyoximeBF$_2$)$_2$(H_2O)Bz			99	142
Co(1,4,8,11-tetraazacyclotetradecane)$_2$(H_2O)Bz^{2+}			98	141
[cobinamide]R	R = *i*-Pr		110	111
	R = CH_2CMe_3		126	119
	R = Bz		105	148
	R = Adenosine		144	
B_{12}R	R = *i*-Pr		79	80
	R = *i*-Bu		104	95
	R = CH_2CMe_3		90, 99	83, 92
	R = Bz		95	138
	R = $CH_2C_5H_9$		99	
B_{12}Ado			112, 125, 131	
Rh(Cp)(C_2H_4)$_2$		Rh-C	<130	
Rh(octaethylporphyrine)R				
	R = H		259	259
	R = C(O)H		249	300
	R = CH(Bu)OH		187	
Rh(Cl)(B)[P(4-tolyl)$_3$]$_2$$H_2$			242	242
Rh($NC_3H_3C_6H_3$CO)(Cl)(pyridine)C(Ph)(OMe)H			128	
Ir(R)(CO)(PPh_3)$_2$$H_2$	R = Cl	Ir-C	247	272
	R = Br		253	
	R = I		258	270
Ir(Cl)(CO)(PPh_3)$_2$(R)H				
	R = Cl		245	271
	R = Br		237	262
Ir(Cl)(CO)($PMePh_2$)$_2$(Cl)H			266	291

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Compound		Bond Dissociation Enthalpy (kJ/mol)		
		Bond (C-Y)	Energy	Bond Enthalpy Terms
$Ir(Cl)(CO)(PR_3)_2H_2$	R = Et	Ir-C	243	268
	R = c-C_6H_{11}		246	271
$Ir(R)(CO)(X)_2H_2$	R = Cl, X = P(*i*-Pr)$_3$		240	265
	R = Cl, X = $PBuPh_2$		242	267
	R = Cl, X = PPh_3		251	276
	R = Cl, X = P(c-C_6H_{11})$_3$		240	265
	R = Cl, X = PBz_4		249	274
	R = Cl, X = P(*p*-tolyl)$_3$		246	271
	R = Cl, X = $P(OPh)_3$		244	269
	R = Br, X = P(*i*-Pr)$_3$		245	270
	R = Br, X = PPh_3		235	260
	R = Br, X = P(c-C_6H_{11})$_3$		244	269
	R = Br, X = $P(OPh)_3$		238	263
	R = I, X = P(*i*-Pr)$_3$		227	252
	R = I, X = PPh_3		229	254
	R = I, X = P(c-C_6H_{11})$_3$		256	281
	R = I, X = $P(OPh)_3$		224	249
$Ir(Cl)_2(CO)(R)_2C(O)Me$				
	R = PMe_3			>237
	R = PEt_3			>241
$Ir(Cp^*)(PMe_3)H_2$			310	310
$Ir(Cp^*)(PMe_3)(R)H$	R = Ph		337	293
	R = c-C_6H_{11}		209	216
$Ir(Cp^*)(PMe_3)(H)R$	R = c-C_5H_9		215	
	R = c-C_5H_{11}		244	
	R = Ph		321	277
	R = c-C_6H_{11}		218	225
	R = 2,3-Me_2Bu		240	237
	R = CH_2CMe_2Et		<233	
$Ir(Cp^*)(PMe_3)Me_2$			243	219
$Ir(Cp^*)(PMe_3)(Br)C_2H_3$			326	288

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Compound		Bond Dissociation Enthalpy (kJ/mol)		
		Bond (C-Y)	Energy	Bond Enthalpy Terms
$Ir(R)(CO)(PPh_3)_2X$	R = F, X = C_2F_4	Ir-X	79	
	R = F, X = C_4F_6		99	
	R = Cl, X = C_2F_4		67	
	R = Cl, X = C_4F_6		96	
	R = Br, X = C_2F_4		41	
	R = Br, X = C_4F_6		79	
	R = I, X = C_2F_4		57	
	R = I, X = C_4F_6		82	

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$Ni(cod)_2$		Ni-C	209	-
$[Pd(C_3H_5)Cl]_2$		Pd-C	-	262
cis-$Pd(Cl)_2$(cod)			-	344
$Pd(I)(bipy)Me_3$			136	-
$Pt(Cp)Me_3$		Pt-C	163	195
$Pt(Cp)_2Me_2$			-	195
trans-$Pt(PEt_3)_2Ph_2$			-	159
cis-Pt(PEt3)$_2Me_2$			269	245
cis-$Pt(PEt_3)_2$(*o*-tolyl)$_2$			298	254
cis-$Pt(PEt_3)_2(Cl)Me$			251	227
cis-$Pt(PEt_3)_2$(Cl)(*o*-tolyl)			300	256
trans-$Pt(PPh_3)_2(Cl)H$			307	307
cis-$Pt(PPh_3)_2(I)Me$			242	218
trans-$Pt(PEt_3)_2(Cl)Et$			206	196
$Pt(PPh_3)_2(Cl)C(O)Ph$			>232	>288
Pt(PMe2Ph)2(Cl)(Me)2C(O)Me			306	
$Pt(R)_2CH_2CH_2CH_2$	R = Cl		120	
	R = Br		122	
$Pt(Cl)_2(R)CH_2CH_2CH_2$				
	R = $(py)_2$		117	
	R = $(4\text{-Mepy})_2$		113	
	R = bipy		121	
$Pt(Br)_2(R)CH_2CH_2CH_2$				
	R = $(py)_2$		1117	
	R = $(4\text{-Mepy})_2$		114	
	R = bipy		124	
$Pt(PPh_3)_2$(dpcb)			150	217, 217

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Compound		Bond Dissociation Enthalpy (kJ/mol)		
		Bond (C-Y)	Energy	Bond Enthalpy Terms
$Pt(PPh_3)_2R$	$R = C_2H_4$	Pt-C	152	
	$R = PhCHCH_2$		169	
	R = *cis*-$C_2H_2Ph_2$		194	
	R = *trans*-$C_2H_2Ph_3$		210	
	$R = C_2Ph_2$		181	
	$R = C_2(CN)_4$		277	
	R = pcbd		177	
$Pt(Cl)_2(cod)$			398	
$Pt(AsMe_3)(X)(Me)R$	$X = Cl, R = C_2F_4$		52	
	$X = Br, R = C_2F_4$		48	
	$X = Cl, R = C_4F_6$		69	
	$X = Br, R = C_4F_6$		61	
$Pt(AsMe_2Ph)(X)(Me)R$				
	$X = Cl, R = C_4F_6$		73	
	$X = Br, R = C_4F_6$		80	

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Compound	Bond Dissociation Enthalpy (kJ/mol)		
	Bond (C-Y)	Energy	Bond Enthalpy Terms
Sc-Me	M^+-L	247	
Ti-Me		226	
V-Me		207	
Cr-Me		126	
Mn-Me		213	
Fe-Me		242	
Co-Me		205	
Ni-Me		188	
Cu-Me		124	
Zn-Me		296	
Y-Me		249	
Ru-Me		226	
Rh-Me		198	
Pd-Me		247	
Cd-Me		228	
La-Me		231	
Hg-Me		285	
Lu-Me		190	

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$Sc-CH_2$	M^+-L	412	
$Ti-CH_2$		391	
$V-CH_2$		335	
$Cr-CH_2$		226	
$Mn-CH_2$		297	
$Fe-CH_2$		347	
$Co-CH_2$		326	
$Ni-CH_2$		314	
$Cu-CH_2$		268	
$Y-CH_2$		398	
$Nb-CH_2$		456	
$Rh-CH_2$		381	
$La-CH_2$		411	
$Lu-CH_2$		≥240	

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Compound	Bond Dissociation Enthalpy (kJ/mol)		
	Bond (C-Y)	Energy	Theory Level
Ti-CH	M^+-L	508	
V-CH		481	
Cr-CH		314	
Fe-CH		426	
Co-CH		426	
Nb-CH		610	
Rh-CH		431	
La-CH		524	

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V-C	M^+-C	383	
Fe-C		397	
Co-C		384	
Nb-C		600	
Rh-C		686	
La-C		427	

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Sc-Me	M-Me	134	
Ti-Me		192	
V-Me		155	
Cr-Me		172	
Mn-Me		126	
Fe-Me		155	
Co-Me		191	
Ni-Me		231	
Cu-Me		243	
Zn-Me		80	

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Compound	Bond Dissociation Enthalpy (kJ/mol)		
	Bond (C-Y)	Energy	Theory Level
$ScMe_2$	M^+-Me	238	247
$TiMe_2$		268	226
VMe_2		203	207
$FeMe_2$		>160	242
$RuMe_2$		>176	226
$CoMe_2$		255	205
$RhMe_2$		>205	198
$NiMe_2$		>214	188
$PdMe_2$		>155	247
$ZnMe_2$		115	296
$CdMe_2$		109	228
$HgMe_2$		96	285
Sc(H)Me	M^+-Me	263	M^+-H 239
V(H)Me		188	202
Co(H)Me		182	195

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ScL^+	L = C_2H_2	M-L^+	326
	L = C_2H_4		≥147, 167
	L = C_6H_6		222
YL^+	L = C_2H_4		>138
	L = C_3H_4		>297
	L = C_3H_6		>126
	L = C_4H_6		>238
LaL^+	L = C_2H_4		>138
	L = C_3H_4		>297
	L = C_3H_6		>126
	L = C_4H_6		>238
$TiC_6H_6^+$			>205

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Compound		Bond Dissociation Enthalpy (kJ/mol)		
		Bond (C-Y)	Energy	Theory Level
VL^+	L = C_2	$V\text{-}L^+$	≥527	
	L = C_2H		497	
	L = C_2H_2		212	
	L = C_2H_3		≥367	
	L = C_2H_4		209	
	L = Et		234	
$VC_3H_5^+$			427	
$VC_6H_6^+$			260	
$V(C_6H_6)_2^+$			239	
$NbCH_2^{2+}$		$Nb\text{-}L^+$	819	
$NbC_6H_6^+$			276	
$TaC_6H_6^+$		$Ta\text{-}L^+$	251<*D*<301	
$CrC_6H_6^+$		$Cr\text{-}L^+$	222	
MoL^+	L = C_2H_2	$Mo\text{-}L^+$	≥312	
	L = C_2H_4		≥137	
	L = 1,3-C_4H_6		≥245	
	L = C_6H_6		≥250	
$FeC_2H_4^+$		$Fe\text{-}L^+$	142, 174	
$Fe(C_3H_5)_2^+$			232	
$FeC_3H_6^+$			155	
$FeC_4H_6^+$			201	
$FeCp^+$			>364	
$Fe(c\text{-}C_5H_6)^+$			213	
$FeC_6H_4^+$			318	
$FeC_6H_6^+$			230	
$RuC_2H_4^+$		$Ru\text{-}L^+$	>159	
$CoC_2H_4^+$		$Co\text{-}L^+$	155, 192	
$CoC_3H_6^+$			201	
$CoC_4H_6^+$			<218	
$Co(Cp)C_4H_6^+$			>238	
$CoCp^+$			356	
$Co(Cp)_2^+$			513	
$Co(C_6H_6)^+$			285	
$Co(PhMe)^+$			>201	
$CoSiH_2^+$			271	
$RhC_2H_4^+$		$Rh\text{-}L^+$	>159	
$RhC_4H_6^+$			>236	
$RhC_6H_6^+$			276	

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Compound	Bond Dissociation Enthalpy (kJ/mol)		
	Bond (C-Y)	Energy	Proton Affinity
$NiC_2H_4^+$	$Ni-L^+$	155	
$Ni(C_2H_4)_2^+$		180	
$NiC_3H_5^+$		243	
$NiC_6H_6^+$		285	
$NiCF_2^+$		196	
$NiSiH_2^+$		271	
$CuC_6H_6^+$	$Cu-L^+$	209	

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$Ni(Cp)^+$-L	L = PH_3	$Ni(Cp^+)$-L	190.4	-58.2
	L = MeOH		190.8	-84.1
	L = NO		192.0	-78
	L = Me_2O		196.2	-49.8
	L = MeCHO		196.7	-67.4
	L = MeSH		197.1	-68.6
	L = EtOH		198.7	-61.5
	L = HCN		199.2	-109.2
	L = EtCHO		201.3	-56.9
	L = *i*-PrCHO		205.4	-49.0
	L = C_2H_3CHO		206.3	-59.8
	L = *i*-PrOH		207.1	-43.9
	L = *t*-BuCHO		207.5	-52.3
	L = Me_2CO		212.1	-32.6
	L = *i*-BuOH		212.5	-41.8
	L = MeOAc		213.0	-41.4
	L = Et_2O		213.0	-19.2
	L = Me_2S		213.8	-18.0
	L = NH_3		218.8	0
	L = MeCN		222.6	-59.0
	L = $MeNH_2$		231.0	38.1
	L = NMe_3		236.0	80.8
	L = Me_2NH		237.7	64.9
	L = $AsMe_3$		239.3	36.4
	L = MeNC		241.0	-26.4
	L = PMe_3		241.0	86.6

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$Mn(CO)_5L$	L = H	Homolytic	Mn^+-L	172	
	L = Me			137, 132	
	L = CH_2F			82	
	L = CHF_2			58	
	L = CF_3			72, 93	
	L = Bz			153	
	L = $Mn(CO)_5$			166	

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Compound	Bond Dissociation Enthalpy (kJ/mol)		
	Bond (C-Y)	Energy	Hydride/Electron Affinity
$Cr(CO)_6$	D[$M(CO)^-_{n-1}$-CHO]	≤147	184 / ≤201
$Mo(CO)_6$		≤172	184 / ≤192
$W(CO)_6$		≤194	184 / ≤192
$Fe(CO)_5$		187	235 / 232

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M-C	M = Sc	M-C	444
	M = Ti		423
	M = V		423
	M = Y		418
	M = Zr		561
	M = Nb		568
	M = Mo		482
	M = Tc		564
	M = Ru		648
	M = Rh		580
	M = Pd		436
	M = La		463
	M = Hf		540
	M = Os		649
	M = Ir		631
	M = Pt		610

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$M-C_2$	M = Sc	$M-C_2$	572
	M = Ti		573
	M = V		578
	M = Cr		451
	M = Y		638
	M = Zr		581
	M = Nb		656
	M = Mo		500
	M = Ru		519
	M = Rh		433
	M = La		659
	M = Hf		674

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pyCo(dimethylglyoxime)$_2CH_3$	$Co-C$	33.1
pyCo(dimethylglyoxime)$_2CH_2C_6H_5$		31.2
pyCo(dimethylglyoxime)$_2CH(CH_3)_2$		21.3

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Compound	Bond Dissociation Enthalpy (kcal/mol)		
	Bond (C-Y)	Energy	Hydride/Electron Affinity
CH_3Co(Salen)H_2O	Co-C	168	
CH_3Co(Salen)imidazole		152	
CH_3Co(Salen)benzimidazole		136	
CH_3Co(Salen)pyridine		127	
C_2H_5Co(Salen)H_2O		125	
n-C_4H_9Co(Salen)H_2O		107	
n-C_4H_9Co(Salen)		108	
i-C_4H_9Co(Salen)H_2O		90	
i-C_3H_7Co(Salen)H_2O		81	
i-C_3H_7Co(Saloph)pyridine		84	
i-C_3H_7Co(DH)$_2$pyridine		89	

Li, G.; Zhang, F. F.; Chen, H.; Yin, H. F.; Chen, H. L.; Zhang, S. Y*J. Chem. Soc. Dalton Trans.* **2002**, 105-110

M—CH_3	M = Y	M-C	66.9
	M = Zr		58.6
	M = Nb		56.6
	M = Mo		45.3
	M = Tc		47.7
	M = Ru		48.5
	M = Rh		52.0
	M = Pd		41.6
	M = *H*	M-H	102.7
M—//	M = Y	M-C	76.8
	M = Zr		67.1
	M = Nb		67.3
	M = Mo		55.3
	M = Tc		54.9
	M = Ru		58.9
	M = Rh		62.4
	M = Pd		50.3
	M = *H*	M-H	108.3
M—≡—H	M = Y	M-C	116.5
	M = Zr		102.9
	M = Nb		102.6
	M = Mo		89.4
	M = Tc		81.8
	M = Ru		89.1
	M = Rh		92.3
	M = Pd		76.1
	M = *H*	M-H	127.3

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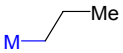
Compound		Bond Dissociation Enthalpy (kcal/mol)		
		Bond (C-Y)	Energy	Theory Level
	M = Y	M-C	61.6	
	M = Zr		54.7	
	M = Nb		53.3	
	M = Mo		42.2	
	M = Tc		44.9	
	M = Ru		46.5	
	M = Rh		50.3	
	M = Pd		40.9	
	M = *H*	M-H	99.8	
	M = Y	M-C	62.9	
	M = Zr		55.9	
	M = Nb		54.6	
	M = Mo		43.6	
	M = Tc		46.1	
	M = Ru		47.7	
	M = Rh		51.8	
	M = Pd		42.0	
	M = *H*	M-H	100.6	
	M = Y	M-C	58.3	
	M = Zr		51.7	
	M = Nb		51.0	
	M = Mo		40.6	
	M = Tc		43.2	
	M = Ru		45.7	
	M = Rh		50.3	
	M = Pd		41.1	
	M = *H*	M-H	98.2	

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