Table 4. Fractional Atomic Coordinates and U(iso) for **8a**.

Atom	x/a	y/b	z/c	U(iso)
Sn(1)	0.77030(1)	0.12830(1)	0.58270(1)	0.04150(6
Ru(1)	0.74270(1)	0.12460(1)	0.81540(1)	0.04567(7
P(1)	0.85800(3)	0.17350(3)	0.90480(5)	0.04640(9
O(1)	0.80760(17)	-0.05410(13)	0.83150(25)	0.081(1)
O(2)	0.92100(11)	0.14100(14)	0.82710(20)	0.0662(9)
N(1)	0.87010(17)	0.27860(13)	0.93160(24)	0.068(1)
N(2)	0.8934(2)	0.1502(2)	1.0577(2)	0.076(1)
C(1)	0.78220(16)	0.01390(15)	0.82240(22)	0.057(1)
C(2)	0.9994(2)	0.1636(4)	0.8688(5)	0.099(2)
C(3)	0.8461(3)	0.3443(2)	0.8394(4)	0.084(2)
C(4)	0.9022(3)	0.3010(2)	1.0634(4)	0.098(2)
C(5)	0.9101(5)	0.2231(3)	1.1395(4)	0.129(3)
C(6)	0.8907(6)	0.0663(3)	1.1141(5)	0.142(4)
C(7)	0.6641(3)	0.2364(3)	0.8181(8)	0.134(4)
C(8)	0.6834(3)	0.2019(3)	0.9439(5)	0.102(3)
C(9)	0.6589(5)	0.1221(4)	0.9435(8)	0.144(5)
C(10)	0.6220(3)	0.1018(5)	0.8287(10)	0.146(5)
C(11)	0.6230(2)	0.1639(6)	0.7464(5)	0.125(3)
C(12)	0.66670(11)	0.11720(13)	0.43780(18)	0.0475(8)
C(13)	0.61220(17)	0.05630(17)	0.45300(25)	0.062(1)
C(14)	0.54810(18)	0.04210(20)	0.36000(32)	0.071(1)
C(15)	0.53660(15)	0.08910(20)	0.24550(25)	0.063(1)
C(16)	0.58900(15)	0.14930(18)	0.22780(21)	0.060(1)
C(17)	0.65400(14)	0.16320(17)	0.32240(23)	0.057(1)
C(18)	0.83290(12)	0.02050(13)	0.52360(19)	0.0464(8)
C(19)	0.80360(18)	-0.02210(19)	0.41010(24)	0.067(1)
C(20)	0.8427(2)	-0.0917(2)	0.3685(3)	0.074(1)
C(21)	0.90980(18)	-0.11810(17)	0.44070(30)	0.069(1)
C(22)	0.93870(17)	-0.07690(22)	0.55350(33)	0.074(1)
C(23)	0.90050(16)	-0.00850(19)	0.59470(27)	0.065(1)
C(24)	0.82250(13)	0.23940(13)	0.51360(20)	0.0493(8)
C(25)	0.89730(15)	0.23580(18)	0.49590(23)	0.061(1)
C(26)	0.9307(2)	0.3066(3)	0.4486(3)	0.079(2)
C(27)	0.8903(3)	0.3815(3)	0.4195(3)	0.097(2)
C(28)	0.8162(3)	0.3872(2)	0.4387(4)	0.086(2)
C(29)	0.7828(2)	0.3171(2)	0.4856(3)	0.070(1)

Table 4. Fractional Atomic Coordinates and U(iso) for **8a**. cont.

Atom	x/a	y/b	z/c	U(iso)
H(2A)	1.03690	0.14430	0.82240	0.12(2)
H(2B)	1.01440	0.14250	0.95510	0.13(2)
H(2C)	1.00150	0.22530	0.87000	0.12(2)
H(3A)	0.85320	0.40490	0.85450	0.16(3)
H(3B)	0.79240	0.33640	0.81350	0.32(7)
H(3C)	0.86960	0.33170	0.76790	0.15(3)
H(4A)	0.86900	0.33990	1.09540	0.15(3)
H(4B)	0.95060	0.32810	1.06880	0.17(3)
H(5A)	0.96130	0.21890	1.18630	0.15(2)
H(5B)	0.87660	0.22480	1.19940	0.17(3)
H(6A)	0.91120	0.05290	1.20240	0.18(3)
H(6B)	0.92010	0.03370	1.06480	0.13(2)
H(6C)	0.83980	0.04470	1.09740	0.20(4)
H(7)	0.67570	0.29170	0.78680	0.15(3)
H(8)	0.71090	0.23070	1.01880	0.23(4)
H(9)	0.66450	0.08410	1.01600	0.25(5)
H(10)	0.59850	0.04690	0.80730	0.29(6)
H(11)	0.59980	0.16300	0.65680	0.17(3)
H(13)	0.61980	0.02290	0.53060	0.10(1)
H(14)	0.51130	0.00040	0.37400	0.10(1)
H(15)	0.49240	0.07930	0.18000	0.07(1)
H(16)	0.58120	0.18210	0.14970	0.08(1)
H(17)	0.69070	0.20490	0.30790	0.07(1)
H(19)	0.75600	-0.00430	0.35910	0.08(1)
H(20)	0.82210	-0.12020	0.28900	0.10(2)
H(21)	0.93650	-0.16560	0.41280	0.09(1)
H(22)	0.98610	-0.09550	0.60450	0.13(2)
H(23)	0.92180	0.01920	0.67450	0.08(1)
H(25)	0.92600	0.18390	0.51650	0.031(5)
H(26)	0.98190	0.30300	0.43590	0.060(8)
H(27)	0.91310	0.43010	0.38640	0.09(1)
H(28)	0.78820	0.43970	0.41950	0.15(2)
H(29)	0.73170	0.32160	0.49820	0.10(1)

Table 5. Anisotropic Thermal Parameters for **8a**.

Atom	U11	U22	U33	U12	U13	U23
Sn(1)	0.0401(1)	0.0412(1)	0.0412(1)	0.0035(1)	0.0066(0)	-0.0017(1)
Ru(1)	0.0471(1)	0.0438(1)	0.0451(1)	-0.0057(1)	0.0135(1)	-0.0063(1)
O(1)	0.104(2)	0.046(1)	0.088(1)	-0.001(1)	0.020(1)	0.004(1)
O(2)	0.0535(8)	0.0710(11)	0.0712(10)	-0.0054(8)	0.0114(7)	-0.0162(8)
N(1)	0.088(2)	0.038(1)	0.070(1)	-0.010(1)	-0.005(1)	-0.013(1)
N(2)	0.106(2)	0.068(1)	0.045(1)	-0.009(1)	-0.013(1)	-0.001(1)
C(1)	0.067(1)	0.047(1)	0.054(1)	-0.005(1)	0.013(1)	0.000(1)
C(2)	0.054(2)	0.118(3)	0.121(3)	-0.013(2)	0.017(2)	-0.012(3)
C(3)	0.105(3)	0.047(1)	0.090(2)	-0.011(1)	0.000(2)	-0.002(1)
C(4)	0.143(4)	0.065(2)	0.075(2)	-0.012(2)	-0.014(2)	-0.027(1)
C(5)	0.229(7)	0.089(3)	0.053(1)	-0.018(3)	-0.026(3)	-0.023(2)
C(6)	0.256(9)	0.082(3)	0.069(2)	-0.023(4)	-0.037(4)	0.024(2)
C(7)	0.105(3)	0.079(2)	0.225(7)	0.044(2)	0.105(4)	0.045(3)
C(8)	0.089(2)	0.117(3)	0.100(3)	0.021(2)	0.029(2)	-0.047(3)
C(9)	0.177(6)	0.091(3)	0.180(6)	0.020(4)	0.141(6)	0.022(4)
C(10)	0.092(3)	0.134(4)	0.218(8)	-0.047(3)	0.096(5)	-0.080(5)
C(11)	0.057(2)	0.232(8)	0.086(2)	0.033(3)	0.028(2)	-0.034(3)
C(12)	0.0435(7)	0.0477(9)	0.0480(8)	0.0056(7)	0.0022(6)	-0.0020(7)
C(13)	0.066(1)	0.057(1)	0.057(1)	-0.011(1)	-0.008(1)	0.015(1)
C(14)	0.062(1)	0.066(1)	0.076(2)	-0.016(1)	-0.007(1)	0.013(1)
C(15)	0.054(1)	0.073(1)	0.056(1)	0.004(1)	-0.004(1)	-0.003(1)
C(16)	0.058(1)	0.073(1)	0.045(1)	0.004(1)	0.004(1)	0.009(1)
C(17)	0.054(1)	0.063(1)	0.052(1)	-0.001(1)	0.010(1)	0.009(1)
C(18)	0.0470(9)	0.0429(8)	0.0476(8)	0.0049(7)	0.0110(7)	-0.0036(6)
C(19)	0.073(2)	0.069(1)	0.052(1)	0.020(1)	-0.001(1)	-0.013(1)
C(20)	0.090(2)	0.067(1)	0.060(1)	0.015(1)	0.007(1)	-0.022(1)
C(21)	0.074(1)	0.050(1)	0.081(1)	0.013(1)	0.023(1)	-0.012(1)
C(22)	0.060(1)	0.075(2)	0.081(2)	0.024(1)	0.003(1)	-0.023(1)
C(23)	0.057(1)	0.068(1)	0.064(1)	0.013(1)	0.001(1)	-0.021(1)
C(24)	0.053(1)	0.047(1)	0.046(1)	-0.001(1)	0.010(1)	0.001(1)
C(25)	0.059(1)	0.067(1)	0.054(1)	-0.011(1)	0.012(1)	-0.008(1)
C(26)	0.080(2)	0.093(2)	0.064(1)	-0.041(2)	0.026(1)	-0.012(1)
C(27)	0.147(4)	0.077(2)	0.063(1)	-0.057(2)	0.015(2)	0.004(1)
C(28)	0.115(3)	0.055(1)	0.080(2)	-0.009(2)	-0.003(2)	0.009(1)
C(29)	0.079(2)	0.045(1)	0.080(2)	0.004(1)	0.006(1)	0.003(1)

Table 6. Intramolecular Bond Lengths for **8a**.

Bond length limits based on covalent radii

Sn(1) - Ru(1)	2.617(1)	Sn(1) - C(12)	2.177(2)
Sn(1) - C(18)	2.181(3)	Sn(1) - C(24)	2.164(3)
Ru(1) - P(1)	2.239(1)	Ru(1) - C(1)	1.858(3)
Ru(1) - C(7)	2.246(6)	Ru(1) - C(8)	2.243(6)
Ru(1) - C(9)	2.226(8)	Ru(1) - C(10)	2.236(7)
Ru(1) - C(11)	2.221(5)	P(1) - O(2)	1.612(3)
P(1) - N(1)	1.665(3)	P(1) - N(2)	1.662(3)
O(1) - C(1)	1.148(4)	O(2) - C(2)	1.438(5)
N(1) - C(3)	1.421(5)	N(1) - C(4)	1.447(5)
N(2) - C(5)	1.423(6)	N(2) - C(6)	1.440(6)
C(4) - C(5)	1.447(6)	C(7) - C(8)	1.417(10)
C(7) - C(11)	1.474(10)	C(8) - C(9)	1.317(8)
C(9) - C(10)	1.306(13)	C(10) - C(11)	1.305(12)
C(12) - C(13)	1.397(4)	C(12) - C(17)	1.398(4)
C(13) - C(14)	1.380(5)	C(14) - C(15)	1.398(5)
C(15) - C(16)	1.369(4)	C(16) - C(17)	1.400(4)
C(18) - C(19)	1.384(4)	C(18) - C(23)	1.375(4)
C(19) - C(20)	1.410(5)	C(20) - C(21)	1.360(5)
C(21) - C(22)	1.367(5)	C(22) - C(23)	1.384(5)
C(24) - C(25)	1.399(4)	C(24) - C(29)	1.405(4)
C(25) - C(26)	1.395(5)	C(26) - C(27)	1.375(6)
C(27) - C(28)	1.393(8)	C(28) - C(29)	1.385(5)
C(2) - H(2A)	0.961(5)	C(2) - H(2B)	0.960(6)
C(2) - H(2C)	0.960(6)	C(3) - H(3A)	0.960(4)
C(3) - H(3B)	0.960(5)	C(3) - H(3C)	0.961(5)
C(4) - H(4A)	0.959(5)	C(4) - H(4B)	0.960(6)
C(5) - H(5A)	0.959(8)	C(5) - H(5B)	0.961(7)
C(6) - H(6A)	0.960(6)	C(6) - H(6B)	0.960(8)
C(6) - H(6C)	0.960(10)	C(7) - H(7)	0.960(6)
C(8) - H(8)	0.960(6)	C(9) - H(9)	0.960(8)
C(10) - H(10)	0.960(7)	C(11) - H(11)	0.960(5)
C(13) - H(13)	0.961(3)	C(14) - H(14)	0.960(4)
C(15) - H(15)	0.960(3)	C(16) - H(16)	0.960(3)
C(17) - H(17)	0.960(3)	C(19) - H(19)	0.960(4)
C(20) - H(20)	0.960(4)	C(21) - H(21)	0.960(3)
C(22) - H(22)	0.960(4)	C(23) - H(23)	0.960(3)
C(25) - H(25)	0.960(3)	C(26) - H(26)	0.961(4)
C(27) - H(27)	0.960(5)	C(28) - H(28)	0.960(4)
C(29) - H(29)	0.959(4)		

Table 7. Intramolecular Bond Angles for **8a**.

Bond length limits based on covalent radii

Ru(1) - Sn(1) - C(12)	111.6(1)	Ru(1) - Sn(1) - C(18)	117.5(1)
Ru(1) - Sn(1) - C(24)	121.0(1)	C(12) - Sn(1) - C(18)	99.0(1)
C(12) - Sn(1) - C(24)	101.1(1)	C(18) - Sn(1) - C(24)	103.3(1)
Sn(1) - Ru(1) - P(1)	93.3(1)	Sn(1) - Ru(1) - C(1)	85.1(1)
Sn(1) - Ru(1) - C(7)	103.5(3)	Sn(1) - Ru(1) - C(8)	140.0(2)
Sn(1) - Ru(1) - C(9)	149.1(3)	Sn(1) - Ru(1) - C(10)	115.7(3)
Sn(1) - Ru(1) - C(11)	92.1(2)	P(1) - Ru(1) - C(1)	88.9(1)
P(1) - Ru(1) - C(7)	105.4(2)	P(1) - Ru(1) - C(8)	94.3(2)
P(1) - Ru(1) - C(9)	115.6(2)	P(1) - Ru(1) - C(10)	149.3(3)
P(1) - Ru(1) - C(11)	143.6(3)	C(1) - Ru(1) - C(7)	162.5(2)
C(1) - Ru(1) - C(8)	134.2(2)	C(1) - Ru(1) - C(9)	105.1(2)
C(1) - Ru(1) - C(10)	102.7(2)	C(1) - Ru(1) - C(11)	127.4(3)
C(7) - Ru(1) - C(8)	36.8(3)	C(7) - Ru(1) - C(9)	59.9(3)
C(7) - Ru(1) - C(10)	59.9(3)	C(7) - Ru(1) - C(11)	38.5(3)
C(8) - Ru(1) - C(9)	34.3(2)	C(8) - Ru(1) - C(10)	57.2(3)
C(8) - Ru(1) - C(11)	60.3(2)	C(9) - Ru(1) - C(10)	34.0(4)
C(9) - Ru(1) - C(11)	58.2(3)	C(10) - Ru(1) - C(11)	34.0(3)
Ru(1) - P(1) - O(2)	111.4(1)	Ru(1) - P(1) - N(1)	119.0(2)
Ru(1) - P(1) - N(2)	118.9(2)	O(2) - P(1) - N(1)	108.3(2)
O(2) - P(1) - N(2)	105.0(2)	N(1) - P(1) - N(2)	92.0(2)
P(1) - O(2) - C(2)	121.0(3)	P(1) - N(1) - C(3)	125.2(3)
P(1) - N(1) - C(4)	114.5(3)	C(3) - N(1) - C(4)	120.1(3)
P(1) - N(2) - C(5)	114.6(3)	P(1) - N(2) - C(6)	124.4(3)
C(5) - N(2) - C(6)	119.2(4)	Ru(1) - C(1) - O(1)	177.5(3)
N(1) - C(4) - C(5)	108.4(4)	N(2) - C(5) - C(4)	109.9(4)
Ru(1) - C(7) - C(8)	71.5(4)	Ru(1) - C(7) - C(11)	69.8(4)
C(8) - C(7) - C(11)	101.6(5)	Ru(1) - C(8) - C(7)	71.7(4)
Ru(1) - C(8) - C(9)	72.1(5)	C(7) - C(8) - C(9)	109.5(6)
Ru(1) - C(9) - C(8)	73.6(5)	Ru(1) - C(9) - C(10)	73.4(5)
C(8) - C(9) - C(10)	109.8(7)	Ru(1) - C(10) - C(9)	72.5(5)
Ru(1) - C(10) - C(11)	72.4(4)	C(9) - C(10) - C(11)	112.0(7)
Ru(1) - C(11) - C(7)	71.6(3)	Ru(1) - C(11) - C(10)	73.6(4)
C(7) - C(11) - C(10)	107.0(6)	Sn(1) - C(12) - C(13)	119.7(2)
Sn(1) - C(12) - C(17)	123.1(2)	C(13) - C(12) - C(17)	116.9(3)
C(12) - C(13) - C(14)	122.2(3)	C(13) - C(14) - C(15)	119.8(3)
C(14) - C(15) - C(16)	119.3(3)	C(15) - C(16) - C(17)	120.6(3)
C(12) - C(17) - C(16)	121.2(3)	Sn(1) - C(18) - C(19)	119.3(2)
Sn(1) - C(18) - C(23)	123.1(2)	C(19) - C(18) - C(23)	117.6(3)
C(18) - C(19) - C(20)	120.8(3)	C(19) - C(20) - C(21)	119.9(3)
C(20) - C(21) - C(22)	119.6(3)	C(21) - C(22) - C(23)	120.7(3)
C(18) - C(23) - C(22)	121.4(3)	Sn(1) - C(24) - C(25)	120.6(2)
Sn(1) - C(24) - C(29)	121.4(2)	C(25) - C(24) - C(29)	118.0(3)
C(24) - C(25) - C(26)	120.9(3)	C(25) - C(26) - C(27)	120.1(4)
C(26) - C(27) - C(28)	120.1(4)	C(27) - C(28) - C(29)	120.0(4)
C(24) - C(29) - C(28)	120.9(4)	O(2) - C(2) - H(2A)	121.0(5)
O(2) - C(2) - H(2B)	106.4(4)	O(2) - C(2) - H(2C)	106.4(4)

Table 7. Intramolecular Bond Angles for **8a**. cont.

Bond length limits based on covalent radii

H(2A) - C(2) - H(2B)	106.9(5)	H(2A) - C(2) - H(2C)	106.8(5)
H(2B) - C(2) - H(2C)	109.0(6)	N(1) - C(3) - H(3A)	125.3(4)
N(1) - C(3) - H(3B)	104.9(4)	N(1) - C(3) - H(3C)	106.1(4)
H(3A) - C(3) - H(3B)	105.5(4)	H(3A) - C(3) - H(3C)	105.5(4)
H(3B) - C(3) - H(3C)	109.0(4)	N(1) - C(4) - H(4A)	109.7(5)
N(1) - C(4) - H(4B)	110.3(4)	C(5) - C(4) - H(4A)	109.2(5)
C(5) - C(4) - H(4B)	110.3(6)	H(4A) - C(4) - H(4B)	109.0(4)
N(2) - C(5) - H(5A)	109.1(6)	N(2) - C(5) - H(5B)	110.0(6)
C(4) - C(5) - H(5A)	108.9(6)	C(4) - C(5) - H(5B)	110.0(6)
H(5A) - C(5) - H(5B)	109.0(4)	N(2) - C(6) - H(6A)	124.4(6)
N(2) - C(6) - H(6B)	100.5(6)	N(2) - C(6) - H(6C)	110.5(7)
H(6A) - C(6) - H(6B)	105.7(8)	H(6A) - C(6) - H(6C)	105.8(7)
H(6B) - C(6) - H(6C)	109.0(6)	Ru(1) - C(7) - H(7)	120.5(5)
C(8) - C(7) - H(7)	129.5(7)	C(11) - C(7) - H(7)	128.9(8)
Ru(1) - C(8) - H(8)	121.6(4)	C(7) - C(8) - H(8)	126.4(6)
C(9) - C(8) - H(8)	124.0(6)	Ru(1) - C(9) - H(9)	121.7(6)
C(8) - C(9) - H(9)	126.6(8)	C(10) - C(9) - H(9)	123.6(7)
Ru(1) - C(10) - H(10)	121.0(6)	C(9) - C(10) - H(10)	123.7(9)
C(11) - C(10) - H(10)	124.3(10)	Ru(1) - C(11) - H(11)	121.7(4)
C(7) - C(11) - H(11)	126.7(8)	C(10) - C(11) - H(11)	126.3(9)
C(12) - C(13) - H(13)	118.8(3)	C(14) - C(13) - H(13)	118.9(3)
C(13) - C(14) - H(14)	120.2(4)	C(15) - C(14) - H(14)	120.0(4)
C(14) - C(15) - H(15)	120.3(3)	C(16) - C(15) - H(15)	120.3(3)
C(15) - C(16) - H(16)	119.7(3)	C(17) - C(16) - H(16)	119.7(3)
C(12) - C(17) - H(17)	119.2(3)	C(16) - C(17) - H(17)	119.6(3)
C(18) - C(19) - H(19)	119.8(3)	C(20) - C(19) - H(19)	119.4(3)
C(19) - C(20) - H(20)	120.0(4)	C(21) - C(20) - H(20)	120.1(4)
C(20) - C(21) - H(21)	120.2(4)	C(22) - C(21) - H(21)	120.3(4)
C(21) - C(22) - H(22)	119.6(4)	C(23) - C(22) - H(22)	119.7(4)
C(18) - C(23) - H(23)	119.5(3)	C(22) - C(23) - H(23)	119.2(3)
C(24) - C(25) - H(25)	119.5(3)	C(26) - C(25) - H(25)	119.6(3)
C(25) - C(26) - H(26)	120.0(4)	C(27) - C(26) - H(26)	119.9(4)
C(26) - C(27) - H(27)	120.2(6)	C(28) - C(27) - H(27)	119.8(5)
C(27) - C(28) - H(28)	120.1(4)	C(29) - C(28) - H(28)	119.8(5)
C(24) - C(29) - H(29)	119.7(3)	C(28) - C(29) - H(29)	119.4(4)

Table 8. Fractional Atomic Coordinates and U(iso) for **8f**.

Atom	x/a	y/b	z/c	U(iso)
Sn(1)	0.84070(1)	0.08060(2)	0.65080(1)	0.04293(9
Ru(1)	0.75050(1)	0.00480(2)	0.49030(1)	0.0437(1)
S(1)	0.99860(4)	-0.09250(6)	0.69910(5)	0.0546(4)
P(1)	0.69790(4)	0.17450(6)	0.48480(5)	0.0462(3)
F(1)	0.92980(19)	-0.28010(24)	0.65730(30)	0.158(2)
F(2)	0.9838(2)	-0.2592(3)	0.8089(3)	0.162(3)
F(3)	1.04760(18)	-0.29370(24)	0.70910(29)	0.159(2)
O(1)	0.65790(16)	-0.08470(25)	0.61780(20)	0.100(2)
O(2)	0.71990(11)	0.21740(16)	0.59970(13)	0.054(1)
O(3)	0.92820(15)	-0.05030(21)	0.71120(19)	0.087(2)
O(4)	1.00380(16)	-0.08540(24)	0.60050(17)	0.091(2)
O(5)	1.06280(16)	-0.06190(27)	0.77490(20)	0.104(2)
N(1)	0.60670(14)	0.19330(25)	0.43780(20)	0.069(2)
N(2)	0.71900(14)	0.27440(23)	0.41600(18)	0.064(1)
C(1)	0.69380(19)	-0.04840(26)	0.57030(23)	0.063(2)
C(2)	0.6929(2)	0.3214(3)	0.6287(3)	0.078(2)
C(3)	0.5494(2)	0.1282(5)	0.4629(4)	0.099(3)
C(4)	0.5875(2)	0.2880(5)	0.3716(3)	0.099(3)
C(5)	0.6557(2)	0.3290(3)	0.3493(3)	0.084(2)
C(6)	0.7939(2)	0.3075(4)	0.4151(3)	0.087(3)
C(7)	0.82410(16)	0.09080(22)	0.79660(18)	0.052(1)
C(8)	0.75420(19)	0.10040(27)	0.81420(22)	0.065(2)
C(9)	0.7474(2)	0.1069(3)	0.9113(3)	0.081(2)
C(10)	0.8104(3)	0.1066(3)	0.9897(3)	0.086(2)
C(11)	0.8796(2)	0.0984(3)	0.9740(2)	0.079(2)
C(12)	0.88740(18)	0.09050(29)	0.87860(21)	0.065(2)
C(13)	0.91670(15)	0.21550(22)	0.64920(18)	0.046(1)
C(14)	0.90600(18)	0.31510(27)	0.69440(22)	0.062(2)
C(15)	0.9464(2)	0.4098(3)	0.6847(3)	0.083(2)
C(16)	0.9990(2)	0.4059(3)	0.6313(3)	0.090(2)
C(17)	1.0111(2)	0.3073(3)	0.5868(3)	0.084(2)
C(18)	0.96990(18)	0.21360(26)	0.59550(23)	0.062(2)
C(19)	0.7963(3)	-0.1471(3)	0.4339(3)	0.086(3)
C(20)	0.7243(3)	-0.1299(4)	0.3769(4)	0.096(3)
C(21)	0.7202(3)	-0.0306(5)	0.3280(3)	0.097(3)
C(22)	0.7939(3)	0.0167(3)	0.3560(3)	0.098(3)
C(23)	0.8394(2)	-0.0574(4)	0.4201(3)	0.080(2)
C(24)	0.9886(2)	-0.2390(3)	0.7205(4)	0.089(3)

Table 8. Fractional Atomic Coordinates and U(iso) for **8f**. cont.

Atom	x/a	y/b	z/c	U(iso)
H(12)	0.93640	0.08470	0.86770	0.07(1)
H(11)	0.92340	0.09820	1.02950	0.069(9)
H(10)	0.80540	0.11220	1.05610	0.11(1)
H(9)	0.69860	0.11130	0.92290	0.11(1)
H(8)	0.71020	0.10270	0.75910	0.07(1)
H(2A)	0.70570	0.34680	0.69620	0.14(2)
H(2B)	0.63910	0.31730	0.60750	0.11(2)
H(2C)	0.70960	0.37820	0.59130	0.09(1)
H(3A)	0.49640	0.13890	0.43590	0.15(2)
H(3B)	0.55850	0.13590	0.53340	0.18(3)
H(3C)	0.55900	0.05260	0.44780	0.21(3)
H(4A)	0.56650	0.34610	0.40290	0.18(3)
H(4B)	0.55130	0.26600	0.31160	0.14(2)
H(5A)	0.65450	0.31110	0.28200	0.16(2)
H(5B)	0.66010	0.40830	0.35810	0.18(2)
H(6A)	0.80610	0.36560	0.37500	0.20(3)
H(6B)	0.81690	0.24140	0.39820	0.23(3)
H(6C)	0.81840	0.32760	0.48240	0.21(3)
H(18)	0.97820	0.14540	0.56410	0.060(9)
H(17)	1.04760	0.30400	0.54930	0.09(1)
H(16)	1.02780	0.47100	0.62570	0.10(1)
H(15)	0.93700	0.47840	0.71450	0.11(1)
H(14)	0.87030	0.31760	0.73310	0.064(9)
H(20)	0.68290	-0.17990	0.37200	0.16(2)
H(21)	0.67650	0.00190	0.28370	0.12(2)
H(22)	0.80940	0.08650	0.33440	0.18(2)
H(19)	0.81380	-0.21020	0.47580	0.15(2)
H(23)	0.89220	-0.04840	0.45020	0.09(1)

Table 9. Anisotropic Thermal Parameters for **8f**.

Atom	U11	U22	U33	U12	U13	U23
Sn(1)	0.0428(1)	0.0420(1)	0.0406(1)	0.0005(1)	0.0106(1)	-0.0011(1)
Ru(1)	0.0420(1)	0.0431(1)	0.0428(1)	-0.0049(1)	0.0121(1)	-0.0030(1)
S(1)	0.0510(4)	0.0543(4)	0.0533(3)	0.0006(3)	0.0102(3)	-0.0004(3)
P(1)	0.0394(4)	0.0499(4)	0.0451(3)	0.0016(3)	0.0077(3)	0.0042(3)
F(1)	0.136(3)	0.083(2)	0.226(4)	-0.047(2)	-0.005(3)	-0.014(2)
F(2)	0.205(4)	0.121(2)	0.153(3)	0.014(2)	0.073(3)	0.074(2)
F(3)	0.136(3)	0.090(2)	0.236(4)	0.063(2)	0.053(3)	0.012(2)
O(1)	0.098(2)	0.106(2)	0.094(2)	-0.034(2)	0.049(2)	0.013(2)
O(2)	0.061(1)	0.047(1)	0.048(1)	0.010(1)	0.011(1)	0.002(1)
O(3)	0.085(2)	0.078(2)	0.095(2)	0.041(1)	0.041(1)	0.021(1)
O(4)	0.104(2)	0.100(2)	0.067(1)	0.006(2)	0.038(1)	0.002(1)
O(5)	0.089(2)	0.125(3)	0.082(2)	-0.043(2)	-0.012(1)	-0.004(2)
N(1)	0.042(1)	0.082(2)	0.075(2)	0.003(1)	0.005(1)	0.011(1)
N(2)	0.057(2)	0.066(2)	0.063(1)	0.005(1)	0.010(1)	0.025(1)
C(1)	0.066(2)	0.059(2)	0.062(2)	-0.014(2)	0.021(1)	-0.007(1)
C(2)	0.096(3)	0.057(2)	0.077(2)	0.023(2)	0.026(2)	-0.004(2)
C(3)	0.046(2)	0.135(4)	0.111(3)	-0.007(2)	0.021(2)	0.010(3)
C(4)	0.061(2)	0.123(4)	0.100(3)	0.026(3)	-0.002(2)	0.041(3)
C(5)	0.081(3)	0.081(3)	0.077(2)	0.018(2)	0.000(2)	0.034(2)
C(6)	0.075(2)	0.090(3)	0.088(3)	-0.022(2)	0.021(2)	0.029(2)
C(7)	0.064(2)	0.041(1)	0.046(1)	0.001(1)	0.017(1)	0.003(1)
C(8)	0.071(2)	0.065(2)	0.057(2)	0.017(2)	0.024(1)	0.005(1)
C(9)	0.088(3)	0.083(2)	0.070(2)	0.024(2)	0.041(2)	0.005(2)
C(10)	0.124(3)	0.075(2)	0.055(2)	0.010(2)	0.038(2)	-0.006(2)
C(11)	0.095(3)	0.087(3)	0.046(1)	-0.008(2)	0.006(2)	-0.006(2)
C(12)	0.065(2)	0.071(2)	0.053(1)	-0.011(2)	0.011(1)	-0.003(2)
C(13)	0.044(1)	0.047(1)	0.044(1)	0.000(1)	0.007(1)	-0.003(1)
C(14)	0.059(2)	0.061(2)	0.064(2)	0.000(1)	0.022(1)	-0.010(1)
C(15)	0.088(3)	0.050(2)	0.105(3)	-0.009(2)	0.032(2)	-0.015(2)
C(16)	0.089(3)	0.064(2)	0.111(3)	-0.029(2)	0.030(2)	-0.002(2)
C(17)	0.073(2)	0.084(3)	0.094(3)	-0.019(2)	0.043(2)	-0.005(2)
C(18)	0.059(2)	0.061(2)	0.064(2)	-0.001(1)	0.023(1)	-0.009(1)
C(19)	0.104(3)	0.063(2)	0.089(3)	0.015(2)	0.042(2)	-0.009(2)
C(20)	0.088(3)	0.096(3)	0.100(3)	-0.028(3)	0.035(3)	-0.057(3)
C(21)	0.091(3)	0.143(4)	0.048(2)	0.043(3)	-0.001(2)	-0.026(2)
C(22)	0.152(4)	0.074(2)	0.071(2)	-0.001(3)	0.071(3)	-0.006(2)
C(23)	0.063(2)	0.111(3)	0.066(2)	-0.003(2)	0.027(2)	-0.030(2)
C(24)	0.073(3)	0.064(2)	0.120(3)	0.017(2)	0.018(2)	0.015(2)

Table 10. Intramolecular Bond Lengths for **8f**.

Bond length limits based on covalent radii

Sn(1) - Ru(1)	2.577(1)	Sn(1) - O(2)	2.711(2)
Sn(1) - O(3)	2.253(3)	Sn(1) - C(7)	2.147(3)
Sn(1) - C(13)	2.147(3)	Ru(1) - P(1)	2.251(1)
Ru(1) - C(1)	1.841(4)	Ru(1) - C(19)	2.242(5)
Ru(1) - C(20)	2.225(5)	Ru(1) - C(21)	2.229(4)
Ru(1) - C(22)	2.238(5)	Ru(1) - C(23)	2.256(4)
S(1) - O(3)	1.449(3)	S(1) - O(4)	1.412(3)
S(1) - O(5)	1.412(3)	S(1) - C(24)	1.802(5)
P(1) - O(2)	1.632(2)	P(1) - N(1)	1.653(3)
P(1) - N(2)	1.649(3)	F(1) - C(24)	1.300(6)
F(2) - C(24)	1.287(6)	F(3) - C(24)	1.319(6)
O(1) - C(1)	1.144(5)	O(2) - C(2)	1.443(5)
N(1) - C(3)	1.434(6)	N(1) - C(4)	1.450(6)
N(2) - C(5)	1.445(5)	N(2) - C(6)	1.444(5)
C(4) - C(5)	1.463(6)	C(7) - C(8)	1.384(5)
C(7) - C(12)	1.402(5)	C(8) - C(9)	1.400(5)
C(9) - C(10)	1.369(6)	C(10) - C(11)	1.359(7)
C(11) - C(12)	1.384(5)	C(13) - C(14)	1.391(5)
C(13) - C(18)	1.389(5)	C(14) - C(15)	1.386(5)
C(15) - C(16)	1.377(6)	C(16) - C(17)	1.383(6)
C(17) - C(18)	1.382(6)	C(19) - C(20)	1.372(7)
C(19) - C(23)	1.383(7)	C(20) - C(21)	1.367(8)
C(21) - C(22)	1.430(8)	C(22) - C(23)	1.379(7)

Table 11. Intramolecular Bond Angles for **8f**.

Bond length limits based on covalent radii

Ru(1) - Sn(1) - O(2)	71.9(1)	Ru(1) - Sn(1) - O(3)	108.2(1)
Ru(1) - Sn(1) - C(7)	128.6(1)	Ru(1) - Sn(1) - C(13)	121.9(1)
O(2) - Sn(1) - O(3)	168.8(1)	O(2) - Sn(1) - C(7)	84.2(1)
O(2) - Sn(1) - C(13)	92.0(1)	O(3) - Sn(1) - C(7)	87.4(1)
O(3) - Sn(1) - C(13)	97.2(1)	C(7) - Sn(1) - C(13)	103.2(1)
Sn(1) - Ru(1) - P(1)	83.3(1)	Sn(1) - Ru(1) - C(1)	86.1(1)
Sn(1) - Ru(1) - C(19)	112.1(2)	Sn(1) - Ru(1) - C(20)	147.5(2)
Sn(1) - Ru(1) - C(21)	151.9(2)	Sn(1) - Ru(1) - C(22)	114.6(2)
Sn(1) - Ru(1) - C(23)	96.9(1)	P(1) - Ru(1) - C(1)	91.4(2)
P(1) - Ru(1) - C(19)	157.7(2)	P(1) - Ru(1) - C(20)	128.6(2)
P(1) - Ru(1) - C(21)	98.6(2)	P(1) - Ru(1) - C(22)	99.3(2)
P(1) - Ru(1) - C(23)	130.1(2)	C(1) - Ru(1) - C(19)	105.2(2)
C(1) - Ru(1) - C(20)	97.6(2)	C(1) - Ru(1) - C(21)	121.7(2)
C(1) - Ru(1) - C(22)	157.5(2)	C(1) - Ru(1) - C(23)	138.6(2)
C(19) - Ru(1) - C(20)	35.8(2)	C(19) - Ru(1) - C(21)	60.2(2)
C(19) - Ru(1) - C(22)	60.1(2)	C(19) - Ru(1) - C(23)	35.8(2)
C(20) - Ru(1) - C(21)	35.7(2)	C(20) - Ru(1) - C(22)	60.4(2)
C(20) - Ru(1) - C(23)	59.6(2)	C(21) - Ru(1) - C(22)	37.3(2)
C(21) - Ru(1) - C(23)	60.4(2)	C(22) - Ru(1) - C(23)	35.7(2)
O(3) - S(1) - O(4)	113.1(2)	O(3) - S(1) - O(5)	115.0(2)
O(3) - S(1) - C(24)	100.8(2)	O(4) - S(1) - O(5)	117.1(2)
O(4) - S(1) - C(24)	105.0(2)	O(5) - S(1) - C(24)	103.3(2)
Ru(1) - P(1) - O(2)	105.1(1)	Ru(1) - P(1) - N(1)	121.6(2)
Ru(1) - P(1) - N(2)	120.7(1)	O(2) - P(1) - N(1)	107.9(2)
O(2) - P(1) - N(2)	108.1(2)	N(1) - P(1) - N(2)	92.5(2)
Sn(1) - O(2) - P(1)	92.2(1)	Sn(1) - O(2) - C(2)	140.7(2)
P(1) - O(2) - C(2)	122.4(2)	Sn(1) - O(3) - S(1)	141.1(2)
P(1) - N(1) - C(3)	124.7(3)	P(1) - N(1) - C(4)	114.3(3)
C(3) - N(1) - C(4)	120.9(4)	P(1) - N(2) - C(5)	115.5(3)
P(1) - N(2) - C(6)	125.6(3)	C(5) - N(2) - C(6)	118.8(3)
Ru(1) - C(1) - O(1)	177.5(3)	N(1) - C(4) - C(5)	108.8(4)
N(2) - C(5) - C(4)	107.7(4)	Sn(1) - C(7) - C(8)	123.5(2)
Sn(1) - C(7) - C(12)	118.5(3)	C(8) - C(7) - C(12)	118.0(3)
C(7) - C(8) - C(9)	120.6(3)	C(8) - C(9) - C(10)	119.9(4)
C(9) - C(10) - C(11)	120.4(4)	C(10) - C(11) - C(12)	120.5(4)
C(7) - C(12) - C(11)	120.6(4)	Sn(1) - C(13) - C(14)	118.0(3)
Sn(1) - C(13) - C(18)	123.6(3)	C(14) - C(13) - C(18)	117.9(3)
C(13) - C(14) - C(15)	120.9(3)	C(14) - C(15) - C(16)	120.2(4)
C(15) - C(16) - C(17)	119.8(4)	C(16) - C(17) - C(18)	119.8(4)
C(13) - C(18) - C(17)	121.4(3)	Ru(1) - C(19) - C(20)	71.5(3)
Ru(1) - C(19) - C(23)	72.7(3)	C(20) - C(19) - C(23)	107.8(4)
Ru(1) - C(20) - C(19)	72.8(3)	Ru(1) - C(20) - C(21)	72.3(3)
C(19) - C(20) - C(21)	109.8(5)	Ru(1) - C(21) - C(20)	72.0(3)
Ru(1) - C(21) - C(22)	71.6(3)	C(20) - C(21) - C(22)	106.7(4)
Ru(1) - C(22) - C(21)	71.0(3)	Ru(1) - C(22) - C(23)	72.9(3)
C(21) - C(22) - C(23)	107.0(4)	Ru(1) - C(23) - C(19)	71.5(3)
Ru(1) - C(23) - C(22)	71.4(3)	C(19) - C(23) - C(22)	108.7(4)
S(1) - C(24) - F(1)	111.1(4)	S(1) - C(24) - F(2)	112.4(4)
S(1) - C(24) - F(3)	110.0(3)	F(1) - C(24) - F(2)	108.8(4)
F(1) - C(24) - F(3)	107.3(4)	F(2) - C(24) - F(3)	107.1(4)