

C(67)-C(68)	1.482(4)		
C(49)-Ru(1)-P(1)	87.77(6)	C(49)-Ru(1)-P(2)	87.54(7)
P(1)-Ru(1)-P(2)	82.657(18)	C(49)-Ru(1)-S(2)	93.56(7)
P(1)-Ru(1)-S(2)	94.968(17)	P(2)-Ru(1)-S(2)	177.346(17)
C(49)-Ru(1)-S(1)	95.30(6)	P(1)-Ru(1)-S(1)	176.421(18)
P(2)-Ru(1)-S(1)	99.279(17)	S(2)-Ru(1)-S(1)	83.030(16)
C(49)-Ru(1)-S(4)	165.59(7)	P(1)-Ru(1)-S(4)	99.830(17)
P(2)-Ru(1)-S(4)	105.468(17)	S(2)-Ru(1)-S(4)	73.711(16)
S(1)-Ru(1)-S(4)	76.777(16)	C(50)-Ru(2)-P(4)	93.84(6)
C(50)-Ru(2)-P(3)	89.89(6)	P(4)-Ru(2)-P(3)	83.926(17)
C(50)-Ru(2)-S(2)	94.69(6)	P(4)-Ru(2)-S(2)	92.056(17)
P(3)-Ru(2)-S(2)	174.107(17)	C(50)-Ru(2)-S(4)	167.23(6)
P(4)-Ru(2)-S(4)	92.708(17)	P(3)-Ru(2)-S(4)	101.709(17)
S(2)-Ru(2)-S(4)	74.111(16)	C(50)-Ru(2)-S(1)	95.43(6)
P(4)-Ru(2)-S(1)	169.757(17)	P(3)-Ru(2)-S(1)	100.411(17)
S(2)-Ru(2)-S(1)	82.871(16)	S(4)-Ru(2)-S(1)	77.367(16)
C(59)-S(1)-Ru(2)	109.01(9)	C(59)-S(1)-Ru(1)	111.20(10)
Ru(2)-S(1)-Ru(1)	86.412(15)	C(55)-S(2)-Ru(1)	110.50(7)
C(55)-S(2)-Ru(2)	112.48(7)	Ru(1)-S(2)-Ru(2)	87.419(16)
O(3)-S(3)-O(5)	115.03(14)	O(3)-S(3)-O(4)	114.14(14)
O(5)-S(3)-O(4)	116.20(16)	O(3)-S(3)-C(58)	103.87(12)
O(5)-S(3)-C(58)	102.40(13)	O(4)-S(3)-C(58)	102.62(13)
C(63)-S(4)-Ru(2)	112.67(7)	C(63)-S(4)-Ru(1)	112.95(7)
Ru(2)-S(4)-Ru(1)	85.753(15)	C(6)-P(1)-C(54)	108.05(10)
C(6)-P(1)-C(12)	101.72(9)	C(54)-P(1)-C(12)	98.69(9)
C(6)-P(1)-Ru(1)	117.67(7)	C(54)-P(1)-Ru(1)	103.87(7)
C(12)-P(1)-Ru(1)	124.49(7)	C(18)-P(2)-C(24)	101.25(10)
C(18)-P(2)-C(53)	106.17(10)	C(24)-P(2)-C(53)	103.10(10)
C(18)-P(2)-Ru(1)	120.19(7)	C(24)-P(2)-Ru(1)	116.94(7)
C(53)-P(2)-Ru(1)	107.52(7)	C(30)-P(3)-C(36)	101.51(9)
C(30)-P(3)-C(52)	103.35(9)	C(36)-P(3)-C(52)	103.72(9)
C(30)-P(3)-Ru(2)	124.20(6)	C(36)-P(3)-Ru(2)	113.82(6)
C(52)-P(3)-Ru(2)	108.09(6)	C(48)-P(4)-C(42)	101.39(9)
C(48)-P(4)-C(51)	105.30(9)	C(42)-P(4)-C(51)	102.35(9)
C(48)-P(4)-Ru(2)	115.98(7)	C(42)-P(4)-Ru(2)	119.99(7)
C(51)-P(4)-Ru(2)	110.07(7)	C(2)-C(1)-C(6)	120.7(2)
C(3)-C(2)-C(1)	119.9(3)	C(4)-C(3)-C(2)	119.8(3)
C(3)-C(4)-C(5)	120.9(3)	C(6)-C(5)-C(4)	119.7(3)
C(5)-C(6)-C(1)	119.1(2)	C(5)-C(6)-P(1)	122.53(18)
C(1)-C(6)-P(1)	118.26(17)	C(12)-C(7)-C(8)	120.2(2)
C(9)-C(8)-C(7)	120.5(2)	C(8)-C(9)-C(10)	119.5(2)
C(11)-C(10)-C(9)	120.4(2)	C(10)-C(11)-C(12)	120.5(2)
C(7)-C(12)-C(11)	118.87(19)	C(7)-C(12)-P(1)	123.00(16)
C(11)-C(12)-P(1)	117.83(16)	C(14)-C(13)-C(18)	120.6(2)
C(13)-C(14)-C(15)	120.0(3)	C(16)-C(15)-C(14)	120.2(2)
C(15)-C(16)-C(17)	120.4(2)	C(18)-C(17)-C(16)	119.8(2)
C(17)-C(18)-C(13)	118.9(2)	C(17)-C(18)-P(2)	123.53(18)
C(13)-C(18)-P(2)	117.29(16)	C(20)-C(19)-C(24)	120.6(2)
C(21)-C(20)-C(19)	120.3(2)	C(20)-C(21)-C(22)	119.6(2)
C(21)-C(22)-C(23)	120.4(2)	C(22)-C(23)-C(24)	120.8(2)
C(23)-C(24)-C(19)	118.31(19)	C(23)-C(24)-P(2)	120.49(16)

C(19)-C(24)-P(2)	121.16(16)	C(26)-C(25)-C(30)	120.6(2)
C(27)-C(26)-C(25)	120.5(2)	C(28)-C(27)-C(26)	119.3(2)
C(27)-C(28)-C(29)	120.7(2)	C(28)-C(29)-C(30)	120.3(2)
C(25)-C(30)-C(29)	118.51(19)	C(25)-C(30)-P(3)	119.76(15)
C(29)-C(30)-P(3)	121.72(16)	C(32)-C(31)-C(36)	120.5(2)
C(33)-C(32)-C(31)	120.6(2)	C(32)-C(33)-C(34)	119.5(2)
C(33)-C(34)-C(35)	120.5(2)	C(34)-C(35)-C(36)	120.8(2)
C(31)-C(36)-C(35)	118.14(19)	C(31)-C(36)-P(3)	122.65(16)
C(35)-C(36)-P(3)	119.17(16)	C(38)-C(37)-C(42)	120.2(2)
C(39)-C(38)-C(37)	120.4(2)	C(40)-C(39)-C(38)	119.7(2)
C(39)-C(40)-C(41)	120.2(2)	C(42)-C(41)-C(40)	120.5(2)
C(41)-C(42)-C(37)	118.9(2)	C(41)-C(42)-P(4)	121.00(16)
C(37)-C(42)-P(4)	120.08(17)	C(48)-C(43)-C(44)	120.3(2)
C(45)-C(44)-C(43)	120.0(2)	C(44)-C(45)-C(46)	119.9(2)
C(47)-C(46)-C(45)	120.3(2)	C(46)-C(47)-C(48)	120.0(2)
C(43)-C(48)-C(47)	119.42(19)	C(43)-C(48)-P(4)	121.66(16)
C(47)-C(48)-P(4)	118.82(16)	O(1)-C(49)-Ru(1)	176.92(19)
O(2)-C(50)-Ru(2)	175.72(18)	C(52)-C(51)-P(4)	110.48(14)
C(51)-C(52)-P(3)	111.28(13)	C(54)-C(53)-P(2)	109.82(14)
C(53)-C(54)-P(1)	104.76(14)	C(56)-C(55)-S(2)	110.80(16)
C(55)-C(56)-C(57)	111.7(2)	F(3)-C(58)-F(1)	106.7(2)
F(3)-C(58)-F(2)	107.9(2)	F(1)-C(58)-F(2)	106.9(2)
F(3)-C(58)-S(3)	111.61(16)	F(1)-C(58)-S(3)	112.60(17)
F(2)-C(58)-S(3)	110.85(17)	C(60)-C(59)-S(1)	119.0(2)
C(61)-C(60)-C(59)	111.3(4)	C(63)-C(62)-C(64)	112.76(18)
C(62)-C(63)-S(4)	111.94(16)	O(6)-C(67)-C(68)	120.9(3)
O(6)-C(67)-C(65)	123.4(3)	C(68)-C(67)-C(65)	115.6(3)

Symmetry transformations used to generate equivalent atoms:

Table 24. Anisotropic displacement parameters ($\text{\AA}^2 \times 10^3$) for $[(\text{dppe})\text{Ru}(\text{CO})]_2(\mu\text{-SCH}_2\text{CH}_2\text{CH}_3)_3[\text{OTf}]$ (**8**). The anisotropic displacement factor exponent takes the form: $-2 \text{ gpi}^2 [\text{h}^2 \text{ a}^* \text{ U11} + \dots + 2 \text{ h k a}^* \text{ b}^* \text{ U}$

Atom	U11	U22	U33	U23	U13	U12
Ru(1)	15(1)	14(1)	20(1)	5(1)	0(1)	3(1)
Ru(2)	15(1)	15(1)	17(1)	5(1)	1(1)	4(1)
S(1)	22(1)	19(1)	20(1)	3(1)	-2(1)	7(1)
S(2)	17(1)	17(1)	19(1)	6(1)	2(1)	4(1)
S(3)	40(1)	23(1)	56(1)	11(1)	20(1)	10(1)
S(4)	16(1)	16(1)	22(1)	6(1)	2(1)	4(1)
P(1)	18(1)	16(1)	24(1)	6(1)	-1(1)	4(1)
P(2)	19(1)	16(1)	23(1)	3(1)	0(1)	5(1)
P(3)	18(1)	17(1)	18(1)	6(1)	1(1)	6(1)
P(4)	18(1)	17(1)	18(1)	5(1)	0(1)	4(1)
F(1)	40(1)	61(1)	58(1)	4(1)	-10(1)	8(1)
F(2)	50(1)	63(1)	54(1)	11(1)	28(1)	10(1)
F(3)	51(1)	32(1)	67(1)	22(1)	8(1)	11(1)
O(1)	31(1)	29(1)	46(1)	14(1)	4(1)	-6(1)
O(2)	22(1)	42(1)	44(1)	13(1)	10(1)	14(1)
O(3)	56(1)	44(1)	62(1)	25(1)	34(1)	26(1)
O(4)	50(1)	55(1)	66(2)	-6(1)	-2(1)	-10(1)
O(5)	84(2)	42(1)	106(2)	35(1)	50(2)	42(1)
O(6)	39(1)	67(2)	76(2)	21(1)	0(1)	2(1)
C(1)	28(1)	36(1)	30(1)	7(1)	1(1)	6(1)
C(2)	41(1)	56(2)	29(1)	5(1)	0(1)	15(1)
C(3)	56(2)	74(2)	31(1)	23(1)	12(1)	31(2)
C(4)	59(2)	53(2)	52(2)	36(2)	21(1)	20(1)
C(5)	41(1)	33(1)	41(1)	18(1)	10(1)	9(1)
C(6)	22(1)	28(1)	27(1)	11(1)	-1(1)	8(1)
C(7)	22(1)	33(1)	52(2)	18(1)	2(1)	7(1)
C(8)	24(1)	42(1)	56(2)	20(1)	8(1)	6(1)
C(9)	19(1)	41(1)	38(1)	-1(1)	1(1)	9(1)
C(10)	27(1)	36(1)	31(1)	1(1)	-5(1)	15(1)
C(11)	26(1)	28(1)	27(1)	5(1)	-3(1)	7(1)
C(12)	19(1)	20(1)	25(1)	1(1)	0(1)	6(1)
C(13)	40(1)	31(1)	28(1)	5(1)	7(1)	12(1)
C(14)	61(2)	36(1)	31(1)	10(1)	14(1)	18(1)
C(15)	68(2)	33(1)	46(2)	13(1)	33(1)	18(1)
C(16)	41(1)	32(1)	61(2)	6(1)	28(1)	10(1)
C(17)	32(1)	25(1)	45(1)	5(1)	14(1)	10(1)
C(18)	28(1)	18(1)	29(1)	1(1)	8(1)	6(1)
C(19)	28(1)	23(1)	32(1)	2(1)	0(1)	7(1)
C(20)	40(1)	21(1)	32(1)	-1(1)	-3(1)	6(1)
C(21)	33(1)	28(1)	31(1)	3(1)	-6(1)	-3(1)
C(22)	24(1)	36(1)	39(1)	-1(1)	-5(1)	4(1)
C(23)	29(1)	25(1)	33(1)	0(1)	-2(1)	7(1)
C(24)	24(1)	19(1)	23(1)	3(1)	0(1)	4(1)
C(25)	21(1)	27(1)	24(1)	5(1)	1(1)	5(1)

C(26)	26(1)	35(1)	23(1)	0(1)	-1(1)	6(1)
C(27)	30(1)	42(1)	22(1)	7(1)	5(1)	12(1)
C(28)	27(1)	33(1)	28(1)	12(1)	10(1)	8(1)
C(29)	26(1)	23(1)	26(1)	7(1)	5(1)	8(1)
C(30)	19(1)	23(1)	20(1)	7(1)	1(1)	9(1)
C(31)	30(1)	29(1)	28(1)	3(1)	-3(1)	13(1)
C(32)	37(1)	37(1)	33(1)	8(1)	5(1)	22(1)
C(33)	24(1)	45(1)	40(1)	17(1)	6(1)	17(1)
C(34)	21(1)	42(1)	52(2)	9(1)	-3(1)	6(1)
C(35)	22(1)	26(1)	46(1)	5(1)	1(1)	6(1)
C(36)	21(1)	24(1)	22(1)	10(1)	4(1)	8(1)
C(37)	39(1)	29(1)	27(1)	3(1)	3(1)	5(1)
C(38)	57(2)	36(1)	28(1)	-4(1)	1(1)	16(1)
C(39)	47(1)	50(2)	22(1)	5(1)	8(1)	25(1)
C(40)	30(1)	44(1)	27(1)	13(1)	8(1)	14(1)
C(41)	26(1)	29(1)	23(1)	5(1)	4(1)	9(1)
C(42)	22(1)	23(1)	20(1)	4(1)	0(1)	9(1)
C(43)	23(1)	41(1)	29(1)	15(1)	-1(1)	4(1)
C(44)	21(1)	63(2)	45(2)	26(1)	3(1)	5(1)
C(45)	22(1)	67(2)	51(2)	26(1)	-4(1)	11(1)
C(46)	29(1)	44(1)	41(1)	21(1)	-5(1)	10(1)
C(47)	25(1)	29(1)	30(1)	12(1)	-1(1)	5(1)
C(48)	21(1)	20(1)	21(1)	3(1)	-2(1)	5(1)
C(49)	23(1)	21(1)	25(1)	6(1)	0(1)	7(1)
C(50)	25(1)	19(1)	22(1)	7(1)	2(1)	6(1)
C(51)	25(1)	17(1)	23(1)	5(1)	-2(1)	5(1)
C(52)	22(1)	19(1)	24(1)	8(1)	2(1)	5(1)
C(53)	26(1)	22(1)	32(1)	1(1)	-4(1)	11(1)
C(54)	26(1)	16(1)	33(1)	6(1)	-5(1)	6(1)
C(55)	20(1)	24(1)	34(1)	9(1)	8(1)	4(1)
C(56)	34(1)	74(2)	66(2)	52(2)	21(1)	21(1)
C(57)	46(2)	79(2)	69(2)	48(2)	28(2)	20(2)
C(58)	31(1)	33(1)	35(1)	8(1)	5(1)	9(1)
C(59)	18(1)	28(1)	73(2)	-9(1)	-6(1)	4(1)
C(60)	46(2)	64(2)	97(3)	38(2)	-14(2)	2(2)
C(61)	210(6)	111(4)	62(3)	61(3)	41(3)	60(4)
C(62)	35(1)	27(1)	41(1)	18(1)	17(1)	12(1)
C(63)	27(1)	24(1)	25(1)	8(1)	9(1)	10(1)
C(64)	26(1)	34(1)	78(2)	20(1)	15(1)	6(1)
C(65)	66(2)	57(2)	75(2)	31(2)	26(2)	27(2)
C(67)	39(1)	41(1)	39(1)	11(1)	5(1)	8(1)
C(68)	55(2)	50(2)	119(3)	38(2)	15(2)	17(2)

Table 25. Hydrogen coordinates ($\times 10^4$) and isotropic displacement parameters ($\text{\AA}^2 \times 10^3$) for $[(\text{dppe})\text{Ru}(\text{CO})_2(\mu\text{-SCH}_2\text{CH}_2\text{CH}_3)_3][\text{OTf}]$ (8).

Atom	x	y	z	U(eq)
H(1)	5438	2583	750	38
H(2)	5768	2462	-338	51
H(3)	6776	3970	-678	59
H(4)	7491	5572	76	60
H(5)	7163	5711	1167	44
H(7)	4430	2506	2370	41
H(8)	2530	2056	2347	47
H(9)	1491	2993	1841	40
H(10)	2352	4349	1326	38
H(11)	4235	4761	1313	33
H(13)	7432	4251	4534	39
H(14)	6607	3458	5343	49
H(15)	4716	3067	5345	56
H(16)	3651	3505	4556	53
H(17)	4463	4312	3738	40
H(19)	6893	7038	4094	34
H(20)	8290	8450	4674	39
H(21)	10062	8231	4789	40
H(22)	10429	6581	4336	42
H(23)	9044	5172	3747	36
H(25)	8290	1734	4245	29
H(26)	7829	2069	5309	35
H(27)	6540	777	5676	37
H(28)	5737	-870	4976	34
H(29)	6195	-1226	3913	29
H(31)	8545	-1976	2731	34
H(32)	10225	-2389	2887	40
H(33)	11673	-1127	3532	41
H(34)	11440	561	4022	47
H(35)	9773	993	3868	39
H(37)	6480	-2262	650	39
H(38)	7152	-2715	-348	49
H(39)	8477	-1451	-707	45
H(40)	9120	277	-71	39
H(41)	8471	735	937	31
H(43)	4727	-1405	1981	36
H(44)	2942	-1354	1674	50
H(45)	2613	-329	921	54
H(46)	4065	621	462	44
H(47)	5852	599	779	34
H(51A)	6163	-2149	1803	26
H(51B)	7468	-1848	1927	26
H(52A)	6889	-1915	2939	25
H(52B)	5981	-1267	2831	25
H(53A)	5063	5131	2996	32

H(53B)	5917	6268	3271	32
H(54A)	6871	6036	2326	30
H(54B)	5605	5906	2096	30
H(55A)	9418	3537	1739	31
H(55B)	9458	2356	1361	31
H(56A)	8499	3826	813	61
H(56B)	8453	2623	435	61
H(57A)	9881	3854	99	87
H(57B)	10385	3068	458	87
H(57C)	10427	4272	832	87
H(59A)	10033	3176	2650	51
H(59B)	10028	4256	3154	51
H(60A)	10621	2489	3514	83
H(60B)	11472	3507	3361	83
H(61A)	11353	3681	4428	176
H(61B)	10070	3584	4319	176
H(61C)	10919	4602	4165°	176
H(62A)	4753	593	3864	38
H(62B)	5043	76	3163	38
H(63A)	6317	1759	3721	29
H(63B)	5383	2361	3584	29
H(64A)	3171	45	3124	67
H(64B)	3746	811	2666	67
H(64C)	3456	1329	3368	67
H(65A)	10297	6077	1483	92
H(65B)	11200	7152	1810	92
H(65C)	11069	6726	1038	92
H(68A)	11111	8674	1234	106
H(68B)	10201	9089	1641	106
H(68C)	9970	8674	870	106