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$C_{38}H_{42}P_2Zr_2$

Table of Positional Parameters and Their Estimated Standard Deviations

Atom	x	y	z	B(A2)
ZR1	0.27284(2)	0.70294(1)	0.85606(1)	1.086(3)
ZR2	0.21331(2)	0.54863(1)	0.63571(1)	0.986(3)
P1	0.12166(5)	0.71051(2)	0.74145(2)	1.251(7)
C2	0.1353(2)	0.64595(9)	0.68715(7)	1.26(3)
C3	0.0498(2)	0.64913(9)	0.63059(7)	1.25(3)
C4	-0.0646(2)	0.7034(1)	0.60773(8)	1.41(3)
C5	-0.0905(2)	0.7657(1)	0.64372(8)	1.56(3)
C6	-0.0120(2)	0.7740(1)	0.70326(8)	1.65(3)
C7	-0.1584(2)	0.6956(1)	0.54516(8)	2.06(3)
C8	-0.2050(3)	0.8267(1)	0.6178(1)	2.68(4)
P9	0.36604(5)	0.54198(2)	0.74981(2)	1.239(7)
C10	0.3509(2)	0.60647(9)	0.80410(7)	1.25(3)
C11	0.4347(2)	0.6025(1)	0.86092(8)	1.38(3)
C12	0.5468(2)	0.5481(1)	0.88392(8)	1.63(3)
C13	0.5756(2)	0.4863(1)	0.84782(8)	1.72(3)
C14	0.4992(2)	0.4786(1)	0.78812(8)	1.66(3)
C15	0.6367(3)	0.5554(1)	0.94745(9)	2.50(4)
C16	0.6878(3)	0.4243(1)	0.8739(1)	2.86(4)
C17	0.5098(2)	0.7733(1)	0.81904(8)	1.93(3)
C18	0.5570(2)	0.7570(1)	0.88113(9)	1.84(3)
C19	0.4535(2)	0.7964(1)	0.91521(8)	1.91(3)

Table of Positional Parameters and Their Estimated Standard Deviations (cont.)

Atom	x	y	z	B(A2)
C20	0.3410(3)	0.8374(1)	0.8749(1)	2.16(4)
C21	0.3763(3)	0.8234(1)	0.81604(9)	2.23(4)
C22	0.5920(3)	0.7454(2)	0.7676(1)	3.18(4)
C23	0.0975(2)	0.6073(1)	0.90712(8)	1.74(3)
C24	0.1678(3)	0.6581(1)	0.95118(8)	2.25(4)
C25	0.0983(3)	0.7289(1)	0.93708(9)	2.46(4)
C26	-0.0088(2)	0.7225(1)	0.8832(1)	2.20(4)
C27	-0.0094(2)	0.6475(1)	0.86481(8)	1.72(3)
C28	0.1259(3)	0.5255(1)	0.9071(1)	2.67(4)
C29	0.3884(2)	0.6437(1)	0.58464(8)	1.52(3)
C30	0.3130(2)	0.5946(1)	0.54003(8)	1.85(3)
C31	0.3809(3)	0.5232(1)	0.55213(9)	2.28(3)
C32	0.4921(2)	0.5277(1)	0.6054(1)	2.24(4)
C33	0.4970(2)	0.6023(1)	0.62557(8)	1.74(3)
C34	0.3606(3)	0.7259(1)	0.5873(1)	2.31(4)
C35	-0.0235(2)	0.4783(1)	0.67264(8)	1.99(3)
C36	-0.0679(2)	0.4922(1)	0.61041(9)	1.78(3)
C37	0.0394(2)	0.4519(1)	0.57809(8)	1.85(3)
C38	0.1507(2)	0.4125(1)	0.62021(9)	2.02(3)
C39	0.1108(3)	0.4285(1)	0.67795(9)	2.10(3)
C40	-0.1084(3)	0.5073(2)	0.7235(1)	3.31(4)

Table of Positional Parameters and Their Estimated Standard Deviations (cont.)

Atom	x	y	z	B(A2)
H1	-0.051(3)	0.813(1)	0.725(1)	2.7(5)*
H2	-0.131(3)	0.742(1)	0.523(1)	4.9(7)*
H3	-0.115(3)	0.658(1)	0.525(1)	3.0(5)*
H4	-0.262(3)	0.693(1)	0.543(1)	3.7(6)*
H5	-0.156(3)	0.845(2)	0.581(1)	5.2(7)*
H6	-0.312(3)	0.809(2)	0.604(1)	5.6(8)*
H7	-0.238(3)	0.865(2)	0.645(1)	4.5(7)*
H8	0.523(2)	0.429(1)	0.7640(9)	1.7(4)*
H9	0.581(3)	0.591(1)	0.968(1)	3.2(5)*
H10	0.624(3)	0.512(1)	0.971(1)	4.0(6)*
H11	0.755(3)	0.564(2)	0.947(1)	4.8(7)*
H12	0.649(3)	0.405(1)	0.908(1)	3.2(5)*
H13	0.785(3)	0.436(2)	0.885(1)	4.7(7)*
H14	0.694(4)	0.381(2)	0.843(1)	6.8(9)*
H15	0.306(3)	0.845(1)	0.780(1)	3.2(5)*
H16	0.262(2)	0.866(1)	0.8828(9)	1.7(4)*
H17	0.451(3)	0.799(1)	0.952(1)	4.2(6)*
H18	0.639(3)	0.726(1)	0.897(1)	2.3(5)*
H19	0.670(4)	0.779(2)	0.759(2)	10(1)*
H20	0.653(3)	0.697(2)	0.775(1)	5.8(8)*
H21	0.521(4)	0.741(2)	0.732(1)	6.6(8)*

Table of Positional Parameters and Their Estimated Standard Deviations (cont.)

Atom	x	y	z	B(A2)
H22	0.241(3)	0.649(1)	0.984(1)	2.9(5)*
H23	0.130(3)	0.772(1)	0.960(1)	3.2(5)*
H24	-0.067(3)	0.761(1)	0.863(1)	3.5(6)*
H25	-0.071(3)	0.632(1)	0.830(1)	2.9(5)*
H26	0.042(3)	0.494(2)	0.925(1)	6.3(8)*
H27	0.242(3)	0.519(1)	0.927(1)	3.8(6)*
H28	0.110(3)	0.513(2)	0.870(1)	6.0(8)*
H29	0.225(3)	0.611(1)	0.506(1)	5.2(7)*
H30	0.359(3)	0.480(1)	0.531(1)	3.3(6)*
H31	0.557(2)	0.493(1)	0.6231(9)	2.1(5)*
H32	0.561(2)	0.618(1)	0.6644(9)	2.2(5)*
H33	0.437(3)	0.755(1)	0.561(1)	4.3(7)*
H34	0.393(3)	0.738(2)	0.627(1)	4.7(7)*
H35	0.248(4)	0.738(2)	0.571(2)	8(1)*
H36	-0.151(3)	0.526(1)	0.594(1)	2.3(5)*
H37	0.028(3)	0.444(1)	0.540(1)	3.4(6)*
H38	0.242(3)	0.385(1)	0.612(1)	3.1(5)*
H39	0.165(3)	0.410(1)	0.716(1)	2.7(5)*
H40	-0.038(3)	0.518(1)	0.761(1)	4.7(7)*
H41	-0.147(4)	0.550(2)	0.711(2)	9(1)*
H42	-0.186(4)	0.482(2)	0.727(2)	9(1)*

Starred atoms were refined isotropically.
Anisotropically refined atoms are given in the form of the isotropic equivalent displacement parameter defined as:
(4/3) * [a2*B(1,1) + b2*B(2,2) + c2*B(3,3) + ab(cos gamma)*B(1,2) + ac(cos beta)*B(1,3) + bc(cos alpha)*B(2,3)]

Table of Refined Displacement Parameter Expressions - Beta's

Name	B(1,1)	B(2,2)	B(3,3)	B(1,2)	B(1,3)	B(2,3)
ZR1	0.00418(2)	0.00082(1)	0.00057(1)	-0.00022(1)	0.00064(1)	-0.00022(1)
ZR2	0.00393(2)	0.00071(1)	0.00053(1)	0.00002(1)	0.00082(1)	-0.00008(1)
P1	0.00513(5)	0.00084(1)	0.00067(1)	0.00075(4)	0.00054(3)	-0.00023(2)
C2	0.0048(2)	0.00084(4)	0.00075(3)	0.0003(2)	0.0008(1)	0.00004(6)
C3	0.0051(2)	0.00094(4)	0.00063(3)	0.0003(2)	0.0010(1)	0.00006(6)
C4	0.0047(2)	0.00126(5)	0.00069(3)	0.0002(2)	0.0006(1)	0.00029(6)
C5	0.0052(2)	0.00104(5)	0.00098(3)	0.0010(2)	0.0004(1)	0.00036(6)
C6	0.0067(2)	0.00092(4)	0.00104(3)	0.0014(2)	0.0012(2)	-0.00014(6)
C7	0.0070(2)	0.00205(6)	0.00079(3)	0.0017(2)	-0.0003(2)	-0.00005(8)
C8	0.0099(3)	0.00155(6)	0.00163(4)	0.0037(2)	-0.0012(2)	0.00002(9)
P9	0.00531(5)	0.00086(1)	0.00062(1)	0.00096(4)	0.00066(3)	-0.00008(1)
C10	0.0046(2)	0.00090(4)	0.00072(3)	0.0005(2)	0.0008(1)	0.00000(6)
C11	0.0050(2)	0.00112(4)	0.00072(3)	0.0001(2)	0.0009(1)	-0.00004(6)
C12	0.0052(2)	0.00142(5)	0.00083(3)	0.0001(2)	0.0003(1)	0.00045(7)
C13	0.0060(2)	0.00130(5)	0.00095(3)	0.0010(2)	0.0006(1)	0.00052(7)
C14	0.0067(2)	0.00101(5)	0.00098(3)	0.0012(2)	0.0009(2)	0.00005(7)
C15	0.0092(3)	0.00253(7)	0.00082(3)	0.0022(2)	-0.0011(2)	0.00016(8)
C16	0.0112(3)	0.00175(6)	0.00157(4)	0.0038(2)	-0.0015(2)	0.00062(9)
C17	0.0067(2)	0.00174(5)	0.00094(3)	-0.0030(2)	0.0015(1)	-0.00043(7)
C18	0.0052(2)	0.00155(5)	0.00108(3)	-0.0016(2)	0.0005(2)	-0.00041(7)
C19	0.0083(3)	0.00149(5)	0.00084(3)	-0.0025(2)	0.0011(2)	-0.00080(7)

Table of Refined Displacement Parameter Expressions - Beta's (Continued)

Name	B(1,1)	B(2,2)	B(3,3)	B(1,2)	B(1,3)	B(2,3)
C20	0.0082(3)	0.00090(5)	0.00164(4)	-0.0014(2)	0.0019(2)	-0.00059(7)
C21	0.0099(3)	0.00117(5)	0.00127(4)	-0.0030(2)	0.0003(2)	0.00049(7)
C22	0.0105(3)	0.00345(8)	0.00130(4)	-0.0051(3)	0.0040(2)	-0.0012(1)
C23	0.0065(2)	0.00141(5)	0.00088(3)	-0.0010(2)	0.0015(1)	0.00030(7)
C24	0.0087(3)	0.00254(6)	0.00062(3)	-0.0031(2)	0.0013(1)	-0.00020(8)
C25	0.0102(3)	0.00182(6)	0.00135(3)	-0.0024(2)	0.0044(2)	-0.00135(8)
C26	0.0062(2)	0.00131(5)	0.00178(4)	0.0004(2)	0.0035(2)	-0.00004(8)
C27	0.0052(2)	0.00146(5)	0.00098(3)	-0.0012(2)	0.0010(1)	-0.00005(7)
C28	0.0107(3)	0.00136(6)	0.00176(4)	-0.0005(2)	0.0014(2)	0.00088(9)
C29	0.0058(2)	0.00121(5)	0.00079(3)	-0.0011(2)	0.0015(1)	0.00017(6)
C30	0.0075(2)	0.00187(6)	0.00064(3)	-0.0017(2)	0.0016(1)	0.00006(7)
C31	0.0104(3)	0.00154(5)	0.00127(3)	-0.0012(2)	0.0050(2)	-0.00080(7)
C32	0.0061(2)	0.00155(5)	0.00173(4)	0.0017(2)	0.0038(2)	0.00055(8)
C33	0.0043(2)	0.00176(5)	0.00094(3)	-0.0009(2)	0.0012(1)	0.00038(7)
C34	0.0101(3)	0.00123(5)	0.00142(4)	-0.0007(2)	0.0024(2)	0.00047(8)
C35	0.0077(2)	0.00167(5)	0.00096(3)	-0.0038(2)	0.0022(1)	-0.00034(7)
C36	0.0050(2)	0.00142(5)	0.00110(3)	-0.0018(2)	0.0004(2)	-0.00043(7)
C37	0.0085(3)	0.00121(5)	0.00090(3)	-0.0021(2)	0.0011(2)	-0.00059(7)
C38	0.0086(3)	0.00075(4)	0.00148(4)	-0.0008(2)	0.0018(2)	-0.00025(7)
C39	0.0096(3)	0.00122(5)	0.00108(3)	-0.0032(2)	0.0004(2)	0.00069(7)
C40	0.0113(3)	0.00333(8)	0.00154(4)	-0.0060(3)	0.0052(2)	-0.0015(1)

The form of the anisotropic displacement parameter is:
exp[-(B(1,1)*h2 + B(2,2)*k2 + B(3,3)*l2 + B(1,2)*hk + B(1,3)*hl + B(2,3)*kl)].

Table of Bond Distances in Angstroms

Atom 1	Atom 2	Distance	Atom 1	Atom 2	Distance	Atom 1	Atom 2	Distance
ZR1	P1	2.6922(5)	C2	C3	1.361(2)	C17	C18	1.419(3)
ZR1	C10	2.233(2)	C3	C4	1.404(2)	C17	C21	1.416(3)
ZR1	C11	2.240(2)	C4	C5	1.414(3)	C17	C22	1.496(3)
ZR1	C17	2.554(2)	C4	C7	1.508(3)	C18	C19	1.408(3)
ZR1	C18	2.522(2)	C5	C6	1.405(3)	C18	H18	0.90(3)
ZR1	C19	2.501(2)	C5	C8	1.511(3)	C19	C20	1.410(3)
ZR1	C20	2.511(2)	C6	H1	0.94(3)	C19	H17	0.82(3)
ZR1	C21	2.539(2)	C7	H2	1.01(3)	C20	C21	1.405(3)
ZR1	C23	2.607(2)	C7	H3	0.92(3)	C20	H16	0.86(2)
ZR1	C24	2.531(2)	C7	H4	0.85(3)	C21	H15	1.01(3)
ZR1	C25	2.501(2)	C8	H5	1.01(3)	C22	H19	0.93(5)
ZR1	C26	2.495(2)	C8	H6	0.95(3)	C22	H20	1.01(4)
ZR1	C27	2.557(2)	C8	H7	0.98(3)	C22	H21	0.93(4)
ZR2	C2	2.238(2)	P9	C10	1.697(2)	C23	C24	1.410(3)
ZR2	C3	2.250(2)	P9	C14	1.727(2)	C23	C27	1.402(3)
ZR2	P9	2.6857(5)	C10	C11	1.361(2)	C23	C28	1.493(3)
ZR2	C29	2.600(2)	C11	C12	1.395(3)	C24	C25	1.416(3)
ZR2	C30	2.529(2)	C12	C13	1.415(3)	C24	H22	0.89(3)
ZR2	C31	2.507(2)	C12	C15	1.514(3)	C25	C26	1.396(3)
ZR2	C32	2.504(2)	C13	C14	1.401(3)	C25	H23	0.94(3)
ZR2	C33	2.562(2)	C13	C16	1.514(3)	C26	C27	1.413(3)
ZR2	C35	2.552(2)	C14	H8	1.07(2)	C26	H24	0.93(3)
ZR2	C36	2.518(2)	C15	H9	0.94(3)	C27	H25	0.92(2)
ZR2	C37	2.498(2)	C15	H10	0.96(3)	C28	H26	1.02(4)
ZR2	C38	2.523(2)	C15	H11	0.98(3)	C28	H27	1.01(3)
ZR2	C39	2.551(2)	C16	H12	0.93(3)	C28	H28	0.85(4)
P1	C2	1.696(2)	C16	H13	0.83(3)	C29	C30	1.412(3)
P1	C6	1.729(2)	C16	H14	1.05(4)	C29	C33	1.403(3)

Bond Distances (cont.)

Atom 1	Atom 2	Distance	Atom 1	Atom 2	Distance	Atom 1	Atom 2	Distance
C29	C34	1.503(3)	C34	H33	1.05(3)	C37	C38	1.411(3)
C30	C31	1.415(3)	C34	H34	0.91(3)	C37	H37	0.86(3)
C30	H29	1.01(3)	C34	H35	0.97(4)	C38	C39	1.403(3)
C31	C32	1.400(3)	C35	C36	1.410(3)	C38	H38	0.94(3)
C31	H30	0.91(3)	C35	C39	1.415(3)	C39	H39	0.97(3)
C32	C33	1.419(3)	C35	C40	1.504(3)	C40	H40	0.96(4)
C32	H31	0.88(2)	C36	C37	1.414(3)	C40	H41	0.86(5)
C33	H32	0.99(2)	C36	H36	0.95(2)	C40	H42	0.80(5)

Numbers in parentheses are estimated standard deviations in the least significant digits.

Table of Bond Angles in Degrees

Atom 1	Atom 2	Atom 3	Angle	Atom 1	Atom 2	Atom 3	Angle	Atom 1	Atom 2	Atom 3	Angle
P1	ZR1	C10	70.95(4)	C11	ZR1	C23	78.68(6)	C19	ZR1	C27	134.62(7)
P1	ZR1	C11	106.34(5)	C11	ZR1	C24	88.22(7)	C20	ZR1	C21	32.32(7)
P1	ZR1	C17	86.62(5)	C11	ZR1	C25	120.75(7)	C20	ZR1	C23	133.61(7)
P1	ZR1	C18	119.03(5)	C11	ZR1	C26	131.79(7)	C20	ZR1	C24	105.17(7)
P1	ZR1	C19	129.20(5)	C11	ZR1	C27	102.64(6)	C20	ZR1	C25	80.50(7)
P1	ZR1	C20	100.00(5)	C17	ZR1	C18	32.45(6)	C20	ZR1	C26	90.92(7)
P1	ZR1	C21	75.84(5)	C17	ZR1	C19	54.00(6)	C20	ZR1	C27	123.28(7)
P1	ZR1	C23	103.77(4)	C17	ZR1	C20	53.96(7)	C21	ZR1	C23	162.04(7)
P1	ZR1	C24	130.39(5)	C17	ZR1	C21	32.28(7)	C21	ZR1	C24	137.48(7)
P1	ZR1	C25	116.24(6)	C17	ZR1	C23	163.99(7)	C21	ZR1	C25	110.28(8)
P1	ZR1	C26	84.25(6)	C17	ZR1	C24	142.36(6)	C21	ZR1	C26	109.27(7)
P1	ZR1	C27	77.64(5)	C17	ZR1	C25	132.71(7)	C21	ZR1	C27	135.37(7)
C10	ZR1	C11	35.42(6)	C17	ZR1	C26	141.37(7)	C23	ZR1	C24	31.82(6)
C10	ZR1	C17	86.21(7)	C17	ZR1	C27	163.38(6)	C23	ZR1	C25	53.30(7)
C10	ZR1	C18	95.41(7)	C18	ZR1	C19	32.55(7)	C23	ZR1	C26	53.25(7)
C10	ZR1	C19	127.43(7)	C18	ZR1	C20	53.89(7)	C23	ZR1	C27	31.48(6)
C10	ZR1	C20	140.00(7)	C18	ZR1	C21	53.36(7)	C24	ZR1	C25	32.69(8)
C10	ZR1	C21	110.52(7)	C18	ZR1	C23	135.13(6)	C24	ZR1	C26	53.75(8)
C10	ZR1	C23	85.77(6)	C18	ZR1	C24	110.36(7)	C24	ZR1	C27	52.79(6)
C10	ZR1	C24	109.99(7)	C18	ZR1	C25	111.80(7)	C25	ZR1	C26	32.46(8)
C10	ZR1	C25	139.04(7)	C18	ZR1	C26	138.81(7)	C25	ZR1	C27	53.34(7)
C10	ZR1	C26	125.26(7)	C18	ZR1	C27	162.96(7)	C26	ZR1	C27	32.45(7)
C10	ZR1	C27	93.57(6)	C19	ZR1	C20	32.67(7)	C2	ZR2	C3	35.29(6)
C11	ZR1	C17	86.78(7)	C19	ZR1	C21	53.59(7)	C2	ZR2	P9	71.20(4)
C11	ZR1	C18	77.08(7)	C19	ZR1	C23	122.58(6)	C2	ZR2	C29	85.52(6)
C11	ZR1	C19	102.31(7)	C19	ZR1	C24	90.99(7)	C2	ZR2	C30	108.93(7)
C11	ZR1	C20	130.91(7)	C19	ZR1	C25	81.33(7)	C2	ZR2	C31	138.57(7)
C11	ZR1	C21	118.93(7)	C19	ZR1	C26	106.26(7)	C2	ZR2	C32	126.39(7)

Bond Angles (cont.)

Atom 1	Atom 2	Atom 3	Angle	Atom 1	Atom 2	Atom 3	Angle	Atom 1	Atom 2	Atom 3	Angle
C2	ZR2	C33	94.37(7)	C29	ZR2	C31	53.24(7)	C32	ZR2	C39	109.36(7)
C2	ZR2	C35	86.57(7)	C29	ZR2	C32	53.13(7)	C33	ZR2	C35	163.57(7)
C2	ZR2	C36	96.57(6)	C29	ZR2	C33	31.52(6)	C33	ZR2	C36	162.00(6)
C2	ZR2	C37	128.93(7)	C29	ZR2	C35	164.06(7)	C33	ZR2	C37	133.00(7)
C2	ZR2	C38	140.02(7)	C29	ZR2	C36	135.57(6)	C33	ZR2	C38	121.78(7)
C2	ZR2	C39	110.14(7)	C29	ZR2	C37	123.14(6)	C33	ZR2	C39	134.71(7)
C3	ZR2	P9	106.45(4)	C29	ZR2	C38	134.16(7)	C35	ZR2	C36	32.29(6)
C3	ZR2	C29	78.96(6)	C29	ZR2	C39	162.29(7)	C35	ZR2	C37	53.94(6)
C3	ZR2	C30	87.28(7)	C30	ZR2	C31	32.62(7)	C35	ZR2	C38	53.85(7)
C3	ZR2	C31	119.61(7)	C30	ZR2	C32	53.72(7)	C35	ZR2	C39	32.21(7)
C3	ZR2	C32	132.07(7)	C30	ZR2	C33	53.04(6)	C36	ZR2	C37	32.73(6)
C3	ZR2	C33	103.60(6)	C30	ZR2	C35	141.67(6)	C36	ZR2	C38	53.97(7)
C3	ZR2	C35	86.60(7)	C30	ZR2	C36	109.61(6)	C36	ZR2	C39	53.17(7)
C3	ZR2	C36	77.94(7)	C30	ZR2	C37	91.26(7)	C37	ZR2	C38	32.65(7)
C3	ZR2	C37	103.92(7)	C30	ZR2	C38	106.65(7)	C37	ZR2	C39	53.34(7)
C3	ZR2	C38	131.90(7)	C30	ZR2	C39	138.73(7)	C38	ZR2	C39	32.09(7)
C3	ZR2	C39	118.57(7)	C31	ZR2	C32	32.45(8)	ZR1	P1	C2	125.31(6)
P9	ZR2	C29	103.32(4)	C31	ZR2	C33	53.51(7)	ZR1	P1	C6	133.07(7)
P9	ZR2	C30	130.74(5)	C31	ZR2	C35	132.02(7)	C2	P1	C6	101.59(9)
P9	ZR2	C31	117.69(6)	C31	ZR2	C36	109.81(7)	ZR2	C2	P1	163.1(1)
P9	ZR2	C32	85.56(6)	C31	ZR2	C37	79.77(7)	ZR2	C2	C3	72.8(1)
P9	ZR2	C33	77.70(4)	C31	ZR2	C38	80.93(7)	P1	C2	C3	124.0(1)
P9	ZR2	C35	87.14(5)	C31	ZR2	C39	111.22(7)	ZR2	C3	C2	71.9(1)
P9	ZR2	C36	119.42(5)	C32	ZR2	C33	32.50(7)	ZR2	C3	C4	161.0(1)
P9	ZR2	C37	128.19(5)	C32	ZR2	C35	141.07(7)	C2	C3	C4	127.1(2)
P9	ZR2	C38	98.45(5)	C32	ZR2	C36	136.34(7)	C3	C4	C5	119.5(2)
P9	ZR2	C39	75.32(5)	C32	ZR2	C37	103.62(7)	C3	C4	C7	120.3(2)
C29	ZR2	C30	31.92(6)	C32	ZR2	C38	89.59(7)	C5	C4	C7	120.2(2)

Bond Angles (cont.)

Atom 1	Atom 2	Atom 3	Angle	Atom 1	Atom 2	Atom 3	Angle	Atom 1	Atom 2	Atom 3	Angle
C4	C5	C6	122.4(2)	C11	C12	C15	119.9(2)	ZR1	C18	H18	118.(2)
C4	C5	C8	119.7(2)	C13	C12	C15	120.2(2)	C17	C18	C19	108.6(2)
C6	C5	C8	117.9(2)	C12	C13	C14	122.1(2)	C17	C18	H18	127.(2)
P1	C6	C5	125.2(1)	C12	C13	C16	120.2(2)	C19	C18	H18	125.(2)
P1	C6	H1	119.(2)	C14	C13	C16	117.6(2)	ZR1	C19	C18	74.6(1)
C5	C6	H1	115.(2)	P9	C14	C13	125.3(1)	ZR1	C19	C20	74.0(1)
C4	C7	H2	105.(2)	P9	C14	H8	117.(1)	ZR1	C19	H17	118.(2)
C4	C7	H3	111.(2)	C13	C14	H8	118.(1)	C18	C19	C20	108.1(2)
C4	C7	H4	116.(2)	C12	C15	H9	108.(2)	C18	C19	H17	131.(2)
H2	C7	H3	104.(2)	C12	C15	H10	111.(2)	C20	C19	H17	120.(2)
H2	C7	H4	107.(3)	C12	C15	H11	111.(2)	ZR1	C20	C19	73.3(1)
H3	C7	H4	113.(3)	H9	C15	H10	101.(2)	ZR1	C20	C21	74.9(1)
C5	C8	H5	105.(2)	H9	C15	H11	116.(3)	ZR1	C20	H16	117.(2)
C5	C8	H6	112.(2)	H10	C15	H11	109.(3)	C19	C20	C21	107.6(2)
C5	C8	H7	120.(2)	C13	C16	H12	109.(2)	C19	C20	H16	129.(2)
H5	C8	H6	107.(3)	C13	C16	H13	117.(2)	C21	C20	H16	124.(2)
H5	C8	H7	116.(3)	C13	C16	H14	112.(2)	ZR1	C21	C17	74.5(1)
H6	C8	H7	97.(3)	H12	C16	H13	105.(3)	ZR1	C21	C20	72.8(1)
ZR2	P9	C10	125.24(6)	H12	C16	H14	108.(3)	ZR1	C21	H15	115.(1)
ZR2	P9	C14	133.04(7)	H13	C16	H14	105.(3)	C17	C21	C20	109.1(2)
C10	P9	C14	101.72(9)	ZR1	C17	C18	72.6(1)	C17	C21	H15	130.(2)
ZR1	C10	P9	163.6(1)	ZR1	C17	C21	73.3(1)	C20	C21	H15	121.(2)
ZR1	C10	C11	72.6(1)	ZR1	C17	C22	121.7(1)	C17	C22	H19	110.(3)
P9	C10	C11	123.6(1)	C18	C17	C21	106.6(2)	C17	C22	H20	116.(2)
ZR1	C11	C10	72.0(1)	C18	C17	C22	126.1(2)	C17	C22	H21	113.(3)
ZR1	C11	C12	160.8(1)	C21	C17	C22	127.3(2)	H19	C22	H20	105.(3)
C10	C11	C12	127.2(2)	ZR1	C18	C17	75.0(1)	H19	C22	H21	104.(3)
C11	C12	C13	119.9(2)	ZR1	C18	C19	72.9(1)	H20	C22	H21	107.(3)

Bond Angles (cont.)

Atom 1	Atom 2	Atom 3	Angle	Atom 1	Atom 2	Atom 3	Angle	Atom 1	Atom 2	Atom 3	Angle
ZR1	C23	C24	71.1(1)	C23	C27	H25	130.(2)	ZR2	C32	H31	121.(2)
ZR1	C23	C27	72.3(1)	C26	C27	H25	121.(2)	C31	C32	C33	108.1(2)
ZR1	C23	C28	123.9(1)	C23	C28	H26	116.(2)	C31	C32	H31	129.(2)
C24	C23	C27	107.1(2)	C23	C28	H27	105.(2)	C33	C32	H31	123.(2)
C24	C23	C28	126.4(2)	C23	C28	H28	105.(3)	ZR2	C33	C29	75.7(1)
C27	C23	C28	126.5(2)	H26	C28	H27	115.(2)	ZR2	C33	C32	71.5(1)
ZR1	C24	C23	77.1(1)	H26	C28	H28	102.(3)	ZR2	C33	H32	114.(1)
ZR1	C24	C25	72.5(1)	H27	C28	H28	114.(3)	C29	C33	C32	108.1(2)
ZR1	C24	H22	118.(2)	ZR2	C29	C30	71.3(1)	C29	C33	H32	129.(1)
C23	C24	C25	108.4(2)	ZR2	C29	C33	72.8(1)	C32	C33	H32	123.(1)
C23	C24	H22	128.(2)	ZR2	C29	C34	122.5(1)	C29	C34	H33	111.(2)
C25	C24	H22	124.(2)	C30	C29	C33	107.8(2)	C29	C34	H34	104.(2)
ZR1	C25	C24	74.8(1)	C30	C29	C34	126.3(2)	C29	C34	H35	110.(2)
ZR1	C25	C26	73.6(1)	C33	C29	C34	125.9(2)	H33	C34	H34	108.(2)
ZR1	C25	H23	114.(2)	ZR2	C30	C29	76.8(1)	H33	C34	H35	107.(3)
C24	C25	C26	107.8(2)	ZR2	C30	C31	72.8(1)	H34	C34	H35	116.(3)
C24	C25	H23	123.(2)	ZR2	C30	H29	116.(2)	ZR2	C35	C36	72.5(1)
C26	C25	H23	129.(2)	C29	C30	C31	108.2(2)	ZR2	C35	C39	73.9(1)
ZR1	C26	C25	74.0(1)	C29	C30	H29	123.(2)	ZR2	C35	C40	121.5(1)
ZR1	C26	C27	76.2(1)	C31	C30	H29	129.(2)	C36	C35	C39	106.8(2)
ZR1	C26	H24	115.(2)	ZR2	C31	C30	74.5(1)	C36	C35	C40	126.7(2)
C25	C26	C27	107.9(2)	ZR2	C31	C32	73.6(1)	C39	C35	C40	126.4(2)
C25	C26	H24	125.(2)	ZR2	C31	H30	117.(2)	ZR2	C36	C35	75.2(1)
C27	C26	H24	127.(2)	C30	C31	C32	107.8(2)	ZR2	C36	C37	72.9(1)
ZR1	C27	C23	76.2(1)	C30	C31	H30	129.(2)	ZR2	C36	H36	114.(1)
ZR1	C27	C26	71.3(1)	C32	C31	H30	123.(2)	C35	C36	C37	108.4(2)
ZR1	C27	H25	117.(2)	ZR2	C32	C31	73.9(1)	C35	C36	H36	125.(2)
C23	C27	C26	108.8(2)	ZR2	C32	C33	76.0(1)	C37	C36	H36	127.(2)

Bond Angles (cont.)

Atom 1	Atom 2	Atom 3	Angle	Atom 1	Atom 2	Atom 3	Angle	Atom 1	Atom 2	Atom 3	Angle
ZR2	C37	C36	74.4(1)	ZR2	C38	H38	113.(2)	C35	C39	H39	124.(2)
ZR2	C37	C38	74.6(1)	C37	C38	C39	107.3(2)	C38	C39	H39	127.(2)
ZR2	C37	H37	127.(2)	C37	C38	H38	127.(2)	C35	C40	H40	116.(2)
C36	C37	C38	108.1(2)	C39	C38	H38	126.(2)	C35	C40	H41	105.(3)
C36	C37	H37	127.(2)	ZR2	C39	C35	73.9(1)	C35	C40	H42	109.(3)
C38	C37	H37	124.(2)	ZR2	C39	C38	72.8(1)	H40	C40	H41	104.(4)
ZR2	C38	C37	72.7(1)	ZR2	C39	H39	119.(2)	H40	C40	H42	116.(3)
ZR2	C38	C39	75.1(1)	C35	C39	C38	109.3(2)	H41	C40	H42	106.(4)

Numbers in parentheses are estimated standard deviations in the least significant digits.

$C_{22}H_{24}O_6PW$

Table of Positional Parameters and Their Estimated Standard Deviations

Atom	x	y	z	B(A2)
W1	0.972	0.3942	0.26797(1)	1.343(3)
P1	1.1263(1)	0.4909(1)	0.18645(8)	1.41(2)
C1	1.2456(4)	0.4109(4)	0.1554(3)	1.68(9)
C2	1.3440(4)	0.4455(4)	0.1135(3)	1.53(9)
C3	1.3558(4)	0.5536(5)	0.0892(3)	1.63(8)
C4	1.2684(4)	0.6304(4)	0.1060(3)	1.29(8)
C5	1.1617(4)	0.6184(4)	0.1491(3)	1.43(8)
C6	1.0816(4)	0.7172(4)	0.1678(3)	1.30(8)
C7	0.9777(5)	0.7438(5)	0.1020(3)	1.76(9)
C8	1.0387(6)	0.7552(5)	0.0205(3)	2.6(1)
C9	1.1093(6)	0.8641(6)	0.0279(4)	3.0(1)
C10	1.1502(5)	0.8286(5)	0.1733(3)	1.95(9)
C11	1.0816(5)	0.9024(5)	0.1131(4)	2.1(1)
C12	0.9480(4)	0.8654(4)	0.1214(3)	1.63(9)
C13	1.4389(5)	0.3619(5)	0.0937(4)	2.3(1)
C14	1.4649(5)	0.5869(5)	0.0470(4)	2.2(1)
C15	0.8720(5)	0.6657(6)	0.0998(5)	3.2(1)
C16	0.8589(6)	0.9174(6)	0.0566(4)	2.9(1)
C17	0.8967(5)	0.8939(5)	0.2023(3)	2.02(9)
O11	1.0307(3)	0.6904(4)	0.2428(2)	2.17(7)

Table of Positional Parameters and Their Estimated Standard Deviations (cont.)

Atom	x	y	z	B(A2)
C18	0.8554(5)	0.3121(5)	0.3314(4)	2.1(1)
O1	0.7892(4)	0.2635(4)	0.3718(3)	3.24(9)
C19	0.8278(4)	0.4253(5)	0.1906(3)	1.78(9)
O2	0.7417(4)	0.4374(4)	0.1480(3)	2.68(8)
C20	1.0026(5)	0.2555(5)	0.2079(4)	2.3(1)
O3	1.0199(5)	0.1742(4)	0.1788(3)	3.9(1)
C21	1.1114(4)	0.3526(4)	0.3467(3)	1.67(9)
O4	1.1896(4)	0.3242(4)	0.3902(3)	3.4(1)
C22	0.9424(5)	0.5277(5)	0.3362(4)	2.3(1)
O5	0.9270(4)	0.5963(4)	0.3831(3)	3.04(9)
W2	1.51663(2)	1.04819(2)	0.23136(1)	1.450(3)
P2	1.3652(1)	0.9613(1)	0.31840(8)	1.29(2)
C23	1.2375(4)	1.0316(4)	0.3393(3)	1.55(8)
C24	1.1413(4)	0.9943(4)	0.3815(3)	1.64(9)
C25	1.1393(4)	0.8874(5)	0.4104(3)	1.55(8)
C26	1.2367(5)	0.8158(4)	0.3995(4)	1.88(9)
C27	1.3444(4)	0.8350(4)	0.3615(3)	1.37(8)
C28	1.4375(4)	0.7453(4)	0.3486(3)	1.34(8)
C29	1.4361(4)	0.6394(4)	0.3994(3)	1.64(9)
C30	1.4480(5)	0.6747(5)	0.4884(3)	1.9(1)

Table of Positional Parameters and Their Estimated Standard Deviations (cont.)

Atom	x	y	z	B(A2)
C31	1.5818(5)	0.7115(5)	0.5018(3)	2.2(1)
C32	1.5738(4)	0.7837(5)	0.3662(3)	1.85(9)
C33	1.6318(5)	0.6961(5)	0.4198(3)	1.79(9)
C34	1.5671(5)	0.5914(5)	0.3904(3)	1.80(9)
C35	1.0354(5)	1.0692(5)	0.3969(4)	2.5(1)
C36	1.0320(5)	0.8452(6)	0.4571(4)	2.6(1)
C37	1.3345(5)	0.5593(5)	0.3766(4)	2.2(1)
C38	1.5967(6)	0.4919(5)	0.4417(4)	2.6(1)
C39	1.6009(5)	0.5601(5)	0.3055(4)	2.4(1)
O12	1.4235(4)	0.7220(3)	0.2627(2)	1.96(7)
C40	1.6334(5)	1.1278(5)	0.1622(3)	2.0(1)
O6	1.7030(4)	1.1715(4)	0.1277(3)	3.8(1)
C41	1.6587(5)	1.0235(5)	0.3174(4)	2.1(1)
O7	1.7377(4)	1.0119(4)	0.3624(3)	3.03(9)
C42	1.4791(5)	1.1958(5)	0.2829(3)	2.1(1)
O8	1.4575(5)	1.2776(4)	0.3097(3)	3.6(1)
C43	1.3770(5)	1.0751(5)	0.1473(4)	2.4(1)
O9	1.3015(4)	1.0922(5)	0.1006(3)	3.5(1)
C44	1.5498(5)	0.9072(5)	0.1687(3)	2.2(1)
O10	1.5686(4)	0.8327(4)	0.1333(3)	3.14(9)

Anisotropically refined atoms are given in the form of the isotropic equivalent displacement parameter defined as:
(4/3) * [a2*B(1,1) + b2*B(2,2) + c2*B(3,3) + ab(cos gamma)*B(1,2) + ac(cos beta)*B(1,3) + bc(cos alpha)*B(2,3)]

Table of Refined Displacement Parameter Expressions - Beta's

Name	B(1,1)	B(2,2)	B(3,3)	B(1,2)	B(1,3)	B(2,3)
W1	0.00285(1)	0.00189(1)	0.00138(1)	-0.00016(2)	0.00052(1)	0.00006(2)
P1	0.00313(8)	0.00208(7)	0.00131(4)	0.0003(1)	0.0002(1)	-0.0001(1)
C1	0.0034(3)	0.0020(3)	0.0020(2)	0.0001(5)	-0.0003(4)	0.0014(4)
C2	0.0035(3)	0.0031(3)	0.0010(1)	0.0008(6)	0.0006(4)	-0.0008(4)
C3	0.0035(3)	0.0029(3)	0.0013(2)	0.0004(6)	0.0003(4)	-0.0003(4)
C4	0.0030(3)	0.0028(3)	0.0007(1)	0.0002(5)	0.0007(3)	0.0009(4)
C5	0.0044(4)	0.0019(3)	0.0009(1)	0.0001(5)	-0.0007(4)	0.0003(4)
C6	0.0045(3)	0.0013(3)	0.0008(1)	0.0004(5)	-0.0001(4)	-0.0010(3)
C7	0.0040(4)	0.0024(3)	0.0017(2)	0.0002(6)	-0.0011(4)	-0.0001(4)
C8	0.0075(5)	0.0042(4)	0.0014(2)	0.0045(7)	-0.0004(5)	-0.0004(5)
C9	0.0070(5)	0.0053(4)	0.0023(2)	0.0032(8)	0.0032(5)	0.0036(5)
C10	0.0041(4)	0.0024(3)	0.0021(2)	-0.0000(6)	-0.0014(4)	-0.0015(4)
C11	0.0050(4)	0.0023(3)	0.0024(2)	-0.0009(6)	0.0010(5)	-0.0005(4)
C12	0.0041(3)	0.0021(3)	0.0014(2)	0.0011(5)	-0.0013(4)	0.0002(4)
C13	0.0045(4)	0.0038(4)	0.0023(2)	0.0012(6)	0.0020(4)	0.0008(5)
C14	0.0041(4)	0.0033(3)	0.0024(2)	0.0004(6)	0.0025(4)	0.0007(5)
C15	0.0036(4)	0.0040(4)	0.0047(3)	-0.0009(7)	-0.0033(6)	-0.0006(6)
C16	0.0069(5)	0.0046(4)	0.0023(2)	0.0038(8)	-0.0013(5)	0.0010(5)
C17	0.0050(4)	0.0032(3)	0.0015(2)	0.0011(7)	0.0011(4)	-0.0016(5)
O11	0.0072(3)	0.0034(3)	0.0010(1)	0.0014(5)	0.0031(3)	0.0010(3)

Table of Refined Displacement Parameter Expressions - Beta's (Continued)

Name	B(1,1)	B(2,2)	B(3,3)	B(1,2)	B(1,3)	B(2,3)
C18	0.0033(3)	0.0031(3)	0.0026(2)	0.0003(6)	0.0005(5)	0.0005(5)
O1	0.0062(3)	0.0043(3)	0.0039(2)	-0.0021(6)	0.0038(4)	0.0010(4)
C19	0.0042(4)	0.0029(3)	0.0015(2)	-0.0023(6)	0.0018(4)	-0.0009(4)
O2	0.0046(3)	0.0050(3)	0.0025(2)	-0.0006(5)	-0.0002(4)	0.0003(4)
C20	0.0064(5)	0.0029(4)	0.0018(2)	0.0010(7)	0.0005(5)	0.0001(5)
O3	0.0116(5)	0.0037(3)	0.0035(2)	0.0014(7)	0.0026(5)	-0.0019(4)
C21	0.0037(3)	0.0021(3)	0.0018(2)	-0.0015(5)	0.0003(4)	0.0007(4)
O4	0.0052(3)	0.0043(3)	0.0045(2)	-0.0006(6)	-0.0034(4)	0.0021(5)
C22	0.0043(4)	0.0030(4)	0.0027(2)	-0.0005(6)	-0.0000(5)	0.0006(5)
O5	0.0076(4)	0.0043(3)	0.0027(2)	-0.0007(6)	0.0016(4)	-0.0022(4)
W2	0.00289(1)	0.00212(1)	0.00153(1)	-0.00054(2)	0.00057(1)	0.00022(2)
P2	0.00275(8)	0.00172(7)	0.00135(4)	0.0000(1)	0.00018(9)	0.00035(9)
C23	0.0034(3)	0.0023(3)	0.0014(2)	0.0002(5)	-0.0002(4)	-0.0003(4)
C24	0.0033(3)	0.0021(3)	0.0019(2)	-0.0002(5)	-0.0007(4)	0.0010(4)
C25	0.0030(3)	0.0030(3)	0.0013(1)	-0.0015(6)	0.0000(3)	-0.0005(4)
C26	0.0033(3)	0.0018(3)	0.0027(2)	-0.0011(5)	-0.0010(4)	-0.0001(4)
C27	0.0026(3)	0.0023(3)	0.0013(2)	-0.0000(5)	-0.0001(4)	-0.0003(4)
C28	0.0040(3)	0.0023(3)	0.0006(1)	0.0008(6)	-0.0003(4)	-0.0007(4)
C29	0.0039(3)	0.0021(3)	0.0016(2)	0.0011(6)	-0.0008(4)	-0.0000(4)
C30	0.0048(4)	0.0035(4)	0.0012(2)	0.0009(6)	-0.0003(4)	0.0008(4)

Table of Refined Displacement Parameter Expressions - Beta's (Continued)

Name	B(1,1)	B(2,2)	B(3,3)	B(1,2)	B(1,3)	B(2,3)
C31	0.0057(4)	0.0033(4)	0.0017(2)	0.0014(7)	-0.0018(5)	-0.0011(4)
C32	0.0035(3)	0.0024(3)	0.0022(2)	0.0002(6)	0.0011(4)	0.0009(4)
C33	0.0036(3)	0.0030(3)	0.0016(2)	0.0006(6)	-0.0006(4)	0.0001(4)
C34	0.0037(4)	0.0035(3)	0.0013(2)	0.0008(6)	-0.0003(4)	-0.0011(4)
C35	0.0039(4)	0.0031(4)	0.0033(2)	0.0008(6)	0.0021(5)	-0.0004(5)
C36	0.0046(4)	0.0042(4)	0.0028(2)	-0.0021(7)	0.0024(5)	0.0017(5)
C37	0.0050(4)	0.0025(3)	0.0025(2)	-0.0005(6)	-0.0010(5)	0.0006(5)
C38	0.0072(5)	0.0020(3)	0.0028(2)	0.0018(7)	-0.0017(6)	0.0003(5)
C39	0.0061(4)	0.0027(3)	0.0025(2)	0.0037(6)	-0.0015(5)	-0.0014(5)
O12	0.0063(3)	0.0031(3)	0.0009(1)	0.0015(5)	0.0005(3)	0.0007(3)
C40	0.0051(4)	0.0029(3)	0.0016(2)	0.0002(6)	0.0013(4)	0.0006(4)
O6	0.0067(4)	0.0051(4)	0.0047(2)	-0.0030(6)	0.0049(4)	0.0011(5)
C41	0.0034(3)	0.0032(4)	0.0026(2)	-0.0018(6)	0.0005(4)	-0.0007(5)
O7	0.0039(3)	0.0059(3)	0.0032(2)	-0.0018(5)	-0.0021(4)	-0.0002(4)
C42	0.0045(4)	0.0032(3)	0.0020(2)	-0.0013(6)	0.0021(4)	0.0003(5)
O8	0.0115(5)	0.0030(3)	0.0032(2)	0.0008(7)	0.0036(5)	-0.0020(4)
C43	0.0041(4)	0.0041(4)	0.0025(2)	-0.0012(6)	-0.0002(5)	0.0011(5)
O9	0.0061(4)	0.0076(4)	0.0026(2)	-0.0031(7)	-0.0022(4)	0.0029(5)
C44	0.0050(4)	0.0039(4)	0.0017(2)	-0.0024(7)	0.0020(4)	-0.0000(4)
O10	0.0107(4)	0.0030(3)	0.0024(2)	-0.0009(6)	0.0047(4)	-0.0018(4)

The form of the anisotropic displacement parameter is:
exp[-(B(1,1)*h2 + B(2,2)*k2 + B(3,3)*l2 + B(1,2)*hk + B(1,3)*hl + B(2,3)*kl)].

Table of Bond Distances in Angstroms

Atom 1	Atom 2	Distance	Atom 1	Atom 2	Distance	Atom 1	Atom 2	Distance
W1	P1	2.525(2)	C9	C11	1.539(8)	C25	C36	1.535(7)
W1	C18	1.978(6)	C10	C11	1.523(8)	C26	C27	1.389(7)
W1	C19	2.020(6)	C11	C12	1.548(7)	C27	C28	1.528(8)
W1	C20	2.021(8)	C12	C16	1.555(8)	C28	C29	1.557(8)
W1	C21	2.028(6)	C12	C17	1.526(8)	C28	C32	1.581(7)
W1	C22	2.035(8)	C18	O1	1.178(8)	C28	O12	1.458(6)
P1	C1	1.740(5)	C19	O2	1.160(7)	C29	C30	1.542(8)
P1	C5	1.743(6)	C20	O3	1.134(9)	C29	C34	1.569(7)
C1	C2	1.383(7)	C21	O4	1.149(7)	C29	C37	1.523(7)
C2	C3	1.40(1)	C22	O5	1.170(9)	C30	C31	1.542(7)
C2	C13	1.514(8)	W2	P2	2.501(1)	C31	C33	1.509(7)
C3	C4	1.387(8)	W2	C40	2.021(6)	C32	C33	1.520(7)
C3	C14	1.476(8)	W2	C41	2.082(6)	C33	C34	1.541(9)
C4	C5	1.412(7)	W2	C42	2.064(8)	C34	C38	1.520(9)
C5	C6	1.544(8)	W2	C43	2.046(6)	C34	C39	1.528(9)
C6	C7	1.572(7)	W2	C44	2.070(8)	C40	O6	1.118(8)
C6	C10	1.568(8)	P2	C23	1.699(5)	C41	O7	1.125(7)
C6	O11	1.431(6)	P2	C27	1.735(7)	C42	O8	1.133(9)
C7	C8	1.550(9)	C23	C24	1.377(7)	C43	O9	1.126(7)
C7	C12	1.573(8)	C24	C25	1.40(1)	C44	O10	1.117(9)
C7	C15	1.507(8)	C24	C35	1.517(8)			
C8	C9	1.55(1)	C25	C26	1.405(9)			

Numbers in parentheses are estimated standard deviations in the least significant digits.

Table of Bond Angles in Degrees

Atom 1	Atom 2	Atom 3	Angle	Atom 1	Atom 2	Atom 3	Angle	Atom 1	Atom 2	Atom 3	Angle
P1	W1	C18	177.2(2)	C2	C3	C4	121.1(5)	C9	C11	C10	107.8(5)
P1	W1	C19	95.3(2)	C2	C3	C14	119.4(6)	C9	C11	C12	103.0(4)
P1	W1	C20	90.0(2)	C4	C3	C14	119.4(7)	C10	C11	C12	101.7(4)
P1	W1	C21	87.7(2)	C3	C4	C5	129.1(6)	C7	C12	C11	93.2(4)
P1	W1	C22	92.7(2)	P1	C5	C4	118.8(5)	C7	C12	C16	112.4(5)
C18	W1	C19	86.2(2)	P1	C5	C6	120.1(4)	C7	C12	C17	119.3(5)
C18	W1	C20	87.7(3)	C4	C5	C6	121.0(6)	C11	C12	C16	112.4(5)
C18	W1	C21	90.7(2)	C5	C6	C7	115.1(4)	C11	C12	C17	113.9(5)
C18	W1	C22	89.6(3)	C5	C6	C10	115.3(4)	C16	C12	C17	105.6(5)
C19	W1	C20	89.5(3)	C5	C6	O11	104.2(4)	W1	C18	O1	177.4(6)
C19	W1	C21	176.0(3)	C7	C6	C10	100.7(4)	W1	C19	O2	175.7(5)
C19	W1	C22	93.5(3)	C7	C6	O11	110.7(4)	W1	C20	O3	175.6(7)
C20	W1	C21	87.9(3)	C10	C6	O11	111.1(4)	W1	C21	O4	176.9(6)
C20	W1	C22	175.8(3)	C6	C7	C8	107.3(4)	W1	C22	O5	172.0(6)
C21	W1	C22	88.9(3)	C6	C7	C12	102.0(4)	P2	W2	C40	176.2(2)
W1	P1	C1	115.3(2)	C6	C7	C15	114.4(5)	P2	W2	C41	92.1(2)
W1	P1	C5	141.8(2)	C8	C7	C12	101.3(5)	P2	W2	C42	89.1(2)
C1	P1	C5	102.8(3)	C8	C7	C15	113.8(5)	P2	W2	C43	88.2(2)
P1	C1	C2	126.4(5)	C12	C7	C15	116.6(5)	P2	W2	C44	94.0(2)
C1	C2	C3	121.7(5)	C7	C8	C9	104.2(5)	C40	W2	C41	89.3(2)
C1	C2	C13	117.5(6)	C8	C9	C11	102.6(5)	C40	W2	C42	87.3(3)
C3	C2	C13	120.7(5)	C6	C10	C11	105.5(4)	C40	W2	C43	90.3(2)

Bond Angles (cont.)

Atom 1	Atom 2	Atom 3	Angle	Atom 1	Atom 2	Atom 3	Angle	Atom 1	Atom 2	Atom 3	Angle
C40	W2	C44	89.4(3)	C25	C26	C27	128.5(6)	C30	C31	C33	102.7(4)
C41	W2	C42	90.1(3)	P2	C27	C26	118.3(5)	C28	C32	C33	105.0(4)
C41	W2	C43	179.0(3)	P2	C27	C28	119.3(4)	C31	C33	C32	106.2(4)
C41	W2	C44	94.5(3)	C26	C27	C28	122.0(6)	C31	C33	C34	102.1(5)
C42	W2	C43	88.9(3)	C27	C28	C29	120.4(4)	C32	C33	C34	103.8(4)
C42	W2	C44	174.3(3)	C27	C28	C32	112.9(4)	C29	C34	C33	93.6(5)
C43	W2	C44	86.4(3)	C27	C28	O12	104.1(4)	C29	C34	C38	114.9(5)
W2	P2	C23	118.6(2)	C29	C28	C32	100.8(4)	C29	C34	C39	116.8(4)
W2	P2	C27	136.9(2)	C29	C28	O12	111.2(4)	C33	C34	C38	114.7(5)
C23	P2	C27	104.3(3)	C32	C28	O12	106.8(4)	C33	C34	C39	112.0(5)
P2	C23	C24	126.6(5)	C28	C29	C30	106.3(4)	C38	C34	C39	105.0(6)
C23	C24	C25	121.0(5)	C28	C29	C34	103.3(4)	W2	C40	O6	175.8(6)
C23	C24	C35	119.7(6)	C28	C29	C37	115.9(4)	W2	C41	O7	177.9(5)
C25	C24	C35	119.3(5)	C30	C29	C34	99.6(4)	W2	C42	O8	178.6(7)
C24	C25	C26	121.3(5)	C30	C29	C37	116.5(5)	W2	C43	O9	178.4(6)
C24	C25	C36	121.2(6)	C34	C29	C37	113.2(5)	W2	C44	O10	178.2(6)
C26	C25	C36	117.5(7)	C29	C30	C31	104.7(4)				

Numbers in parentheses are estimated standard deviations in the least significant digits.