Table 1. Crystal data and structure refinement for p.

Identification code	scw311
Empirical formula	C45 H48 Ge N2 O2 P2 Si2
Formula weight	839.56
Temperature	293(2) K
Wavelength	0.71073 A
Crystal system, space group	TRICLINIC, P-1
Unit cell dimensions	a = 11.492(2) A alpha = 65.49(3) deg. b = 14.430(3) A beta = 74.47(3) deg. c = 15.903(3) A gamma = 72.29(3) deg.
Volume	2255.2(8) A^3
Z, Calculated density	2, 1.236 Mg/m^3
Absorption coefficient	0.840 mm^-1
F(000)	876
Crystal size	0.50 x 0.40 x 0.20 mm
Theta range for data collection	2.07 to 25.00 deg.
Limiting indices	-13<=h<=13, -17<=k<=0, -18<=l<=17
Reflections collected / unique	8288 / 7944 [R(int) = 0.0291]
Completeness to theta = 25.00	99.9 %
Absorption correction	EMPIRICAL
Max. and min. transmission	1.0000 and 0.92609
Refinement method	Full-matrix least-squares on F^2
Data / restraints / parameters	7944 / 0 / 488
Goodness-of-fit on F^2	1.032
Final R indices [I>2sigma(I)]	R1 = 0.0504, wR2 = 0.1347
R indices (all data)	R1 = 0.0952, wR2 = 0.1534
Extinction coefficient	0.0322(16)
Largest diff. peak and hole	0.546 and -0.489 e.A^-3

Table 2. Atomic coordinates (x 10^4) and equivalent isotropic displacement parameters (A^2 x 10^3) for p.
U(eq) is defined as one third of the trace of the orthogonalized Uij tensor.

	x	y	z	U(eq)
Ge(1)	6521(1)	6983(1)	2030(1)	46(1)
P(1)	5030(1)	8532(1)	3254(1)	47(1)
P(2)	4183(1)	7224(1)	2440(1)	45(1)
Si(1)	2751(1)	9000(1)	4663(1)	72(1)
Si(2)	5326(1)	5437(1)	1619(1)	66(1)
O(1)	7737(2)	5923(2)	2508(2)	53(1)
O(2)	7566(2)	7523(2)	991(2)	58(1)
N(1)	3945(3)	8393(3)	4076(2)	61(1)
N(2)	5246(3)	6527(2)	1865(2)	48(1)
C(1)	3225(12)	9183(15)	5569(11)	377(13)
C(2)	2039(10)	10284(7)	3976(7)	289(9)
C(3)	1689(11)	8207(9)	5289(12)	382(13)
C(4)	5221(3)	7720(3)	2641(3)	47(1)
C(5)	4083(5)	5758(5)	930(5)	109(2)
C(6)	5168(7)	4284(4)	2706(5)	120(2)
C(7)	6862(5)	5194(5)	910(4)	92(2)
C(11)	6537(4)	8189(3)	3600(3)	61(1)
C(12)	7606(4)	8254(4)	2949(4)	82(2)
C(13)	8743(6)	7941(6)	3251(7)	122(2)
C(14)	8788(7)	7594(6)	4186(8)	135(3)
C(15)	7751(8)	7528(6)	4828(6)	127(3)
C(16)	6601(5)	7826(4)	4541(4)	85(2)
C(21)	4924(4)	9878(3)	2447(3)	55(1)
C(22)	5390(5)	10557(4)	2604(4)	83(2)
C(23)	5173(6)	11610(5)	2045(5)	105(2)
C(24)	4501(6)	11989(4)	1343(5)	103(2)
C(25)	4024(6)	11340(5)	1185(4)	98(2)
C(26)	4251(5)	10276(4)	1727(4)	78(1)
C(31)	3310(4)	6415(3)	3443(3)	54(1)
C(32)	3652(4)	6037(4)	4306(3)	68(1)
C(33)	3048(6)	5340(4)	5070(4)	87(2)
C(34)	2130(6)	5007(5)	4970(4)	96(2)
C(35)	1743(5)	5389(5)	4113(5)	96(2)
C(36)	2338(4)	6099(4)	3332(4)	74(1)
C(41)	3099(4)	8189(3)	1705(3)	57(1)
C(42)	3479(5)	8585(4)	747(3)	81(2)
C(43)	2748(7)	9443(5)	175(5)	115(2)
C(44)	1623(7)	9885(5)	561(6)	118(2)
C(45)	1223(5)	9505(5)	1496(6)	115(2)
C(46)	1956(4)	8652(4)	2094(4)	81(2)
C(51)	9831(3)	5069(3)	2105(3)	49(1)
C(52)	9655(4)	4253(4)	2939(3)	73(1)
C(53)	10572(5)	3357(4)	3195(4)	87(2)
C(54)	11677(4)	3260(4)	2623(4)	76(1)
C(55)	11864(5)	4030(4)	1806(4)	97(2)
C(56)	10960(4)	4935(4)	1527(4)	88(2)

C(57)	8817(3)	5992(3)	1839(3)	48(1)
C(61)	9653(3)	7179(3)	204(3)	51(1)
C(62)	9520(5)	7197(5)	-632(3)	85(2)
C(63)	10348(6)	7549(6)	-1436(4)	107(2)
C(64)	11324(5)	7856(5)	-1404(4)	93(2)
C(65)	11478(4)	7860(4)	-597(4)	84(2)
C(66)	10644(4)	7517(4)	219(3)	69(1)
C(67)	8728(3)	6840(3)	1057(3)	49(1)

Table 3. Bond lengths [A] and angles [deg] for p.

Ge(1)-O(1)	1.781(3)
Ge(1)-O(2)	1.794(3)
Ge(1)-C(4)	1.850(4)
Ge(1)-N(2)	1.892(3)
Ge(1)-P(2)	2.5390(12)
P(1)-N(1)	1.538(3)
P(1)-C(4)	1.746(4)
P(1)-C(21)	1.819(4)
P(1)-C(11)	1.819(4)
P(2)-N(2)	1.660(3)
P(2)-C(4)	1.719(4)
P(2)-C(31)	1.795(4)
P(2)-C(41)	1.797(4)
Si(1)-N(1)	1.667(3)
Si(1)-C(3)	1.745(9)
Si(1)-C(2)	1.781(8)
Si(1)-C(1)	1.807(11)
Si(2)-N(2)	1.743(3)
Si(2)-C(7)	1.843(5)
Si(2)-C(6)	1.849(6)
Si(2)-C(5)	1.863(6)
O(1)-C(57)	1.401(4)
O(2)-C(67)	1.398(4)
C(11)-C(12)	1.377(7)
C(11)-C(16)	1.381(7)
C(12)-C(13)	1.392(8)
C(13)-C(14)	1.369(11)
C(14)-C(15)	1.344(11)
C(15)-C(16)	1.398(8)
C(21)-C(26)	1.377(6)
C(21)-C(22)	1.379(6)
C(22)-C(23)	1.389(8)
C(23)-C(24)	1.357(9)
C(24)-C(25)	1.349(9)
C(25)-C(26)	1.395(7)
C(31)-C(32)	1.369(6)
C(31)-C(36)	1.404(6)
C(32)-C(33)	1.389(6)
C(33)-C(34)	1.353(8)
C(34)-C(35)	1.383(8)
C(35)-C(36)	1.405(7)
C(41)-C(42)	1.383(6)
C(41)-C(46)	1.388(6)
C(42)-C(43)	1.381(7)
C(43)-C(44)	1.361(9)
C(44)-C(45)	1.355(9)
C(45)-C(46)	1.398(8)
C(51)-C(52)	1.375(6)
C(51)-C(56)	1.386(5)
C(51)-C(57)	1.470(5)
C(52)-C(53)	1.383(6)
C(53)-C(54)	1.355(6)
C(54)-C(55)	1.329(7)

C(55)-C(56)	1.386(6)
C(57)-C(67)	1.336(5)
C(61)-C(62)	1.366(6)
C(61)-C(66)	1.378(6)
C(61)-C(67)	1.485(5)
C(62)-C(63)	1.379(7)
C(63)-C(64)	1.346(8)
C(64)-C(65)	1.344(8)
C(65)-C(66)	1.391(6)

O(1)-Ge(1)-O(2)	91.36(12)
O(1)-Ge(1)-C(4)	128.45(15)
O(2)-Ge(1)-C(4)	126.59(15)
O(1)-Ge(1)-N(2)	112.21(13)
O(2)-Ge(1)-N(2)	116.20(14)
C(4)-Ge(1)-N(2)	83.45(15)
O(1)-Ge(1)-P(2)	131.55(9)
O(2)-Ge(1)-P(2)	134.17(9)
C(4)-Ge(1)-P(2)	42.62(12)
N(2)-Ge(1)-P(2)	40.83(9)
N(1)-P(1)-C(4)	112.67(19)
N(1)-P(1)-C(21)	113.12(19)
C(4)-P(1)-C(21)	109.94(19)
N(1)-P(1)-C(11)	114.3(2)
C(4)-P(1)-C(11)	102.94(19)
C(21)-P(1)-C(11)	103.0(2)
N(2)-P(2)-C(4)	94.94(16)
N(2)-P(2)-C(31)	111.52(17)
C(4)-P(2)-C(31)	117.4(2)
N(2)-P(2)-C(41)	111.15(18)
C(4)-P(2)-C(41)	114.29(19)
C(31)-P(2)-C(41)	107.2(2)
N(2)-P(2)-Ge(1)	48.18(11)
C(4)-P(2)-Ge(1)	46.76(12)
C(31)-P(2)-Ge(1)	127.40(14)
C(41)-P(2)-Ge(1)	125.21(15)
N(1)-Si(1)-C(3)	110.2(3)
N(1)-Si(1)-C(2)	114.9(3)
C(3)-Si(1)-C(2)	112.5(7)
N(1)-Si(1)-C(1)	111.3(4)
C(3)-Si(1)-C(1)	103.2(8)
C(2)-Si(1)-C(1)	104.0(8)
N(2)-Si(2)-C(7)	105.9(2)
N(2)-Si(2)-C(6)	111.3(2)
C(7)-Si(2)-C(6)	110.0(3)
N(2)-Si(2)-C(5)	108.5(2)
C(7)-Si(2)-C(5)	110.3(3)
C(6)-Si(2)-C(5)	110.8(3)
C(57)-O(1)-Ge(1)	108.7(2)
C(67)-O(2)-Ge(1)	107.9(2)
P(1)-N(1)-Si(1)	145.4(2)
P(2)-N(2)-Si(2)	135.0(2)
P(2)-N(2)-Ge(1)	90.99(15)
Si(2)-N(2)-Ge(1)	129.77(17)
P(2)-C(4)-P(1)	131.9(2)
P(2)-C(4)-Ge(1)	90.62(17)
P(1)-C(4)-Ge(1)	137.3(2)

C(12)-C(11)-C(16)	119.9(5)
C(12)-C(11)-P(1)	121.6(4)
C(16)-C(11)-P(1)	118.5(4)
C(11)-C(12)-C(13)	119.4(6)
C(14)-C(13)-C(12)	119.9(7)
C(15)-C(14)-C(13)	121.2(7)
C(14)-C(15)-C(16)	119.9(7)
C(11)-C(16)-C(15)	119.7(6)
C(26)-C(21)-C(22)	118.2(4)
C(26)-C(21)-P(1)	120.6(4)
C(22)-C(21)-P(1)	120.8(4)
C(21)-C(22)-C(23)	120.0(6)
C(24)-C(23)-C(22)	121.0(6)
C(25)-C(24)-C(23)	119.9(6)
C(24)-C(25)-C(26)	120.0(6)
C(21)-C(26)-C(25)	120.9(5)
C(32)-C(31)-C(36)	119.7(4)
C(32)-C(31)-P(2)	120.1(3)
C(36)-C(31)-P(2)	120.0(4)
C(31)-C(32)-C(33)	120.5(5)
C(34)-C(33)-C(32)	120.6(6)
C(33)-C(34)-C(35)	120.5(5)
C(34)-C(35)-C(36)	119.8(5)
C(31)-C(36)-C(35)	119.0(5)
C(42)-C(41)-C(46)	119.4(4)
C(42)-C(41)-P(2)	119.2(3)
C(46)-C(41)-P(2)	120.7(4)
C(43)-C(42)-C(41)	121.0(5)
C(44)-C(43)-C(42)	119.2(7)
C(45)-C(44)-C(43)	120.9(6)
C(44)-C(45)-C(46)	121.0(6)
C(41)-C(46)-C(45)	118.4(6)
C(52)-C(51)-C(56)	116.6(4)
C(52)-C(51)-C(57)	119.9(3)
C(56)-C(51)-C(57)	123.4(4)
C(51)-C(52)-C(53)	121.5(4)
C(54)-C(53)-C(52)	120.5(5)
C(55)-C(54)-C(53)	119.3(4)
C(54)-C(55)-C(56)	121.6(5)
C(51)-C(56)-C(55)	120.6(4)
C(67)-C(57)-O(1)	115.3(3)
C(67)-C(57)-C(51)	131.4(3)
O(1)-C(57)-C(51)	113.2(3)
C(62)-C(61)-C(66)	117.9(4)
C(62)-C(61)-C(67)	120.6(4)
C(66)-C(61)-C(67)	121.4(4)
C(61)-C(62)-C(63)	121.0(5)
C(64)-C(63)-C(62)	120.2(5)
C(65)-C(64)-C(63)	120.5(5)
C(64)-C(65)-C(66)	120.0(5)
C(61)-C(66)-C(65)	120.3(5)
C(57)-C(67)-O(2)	116.5(3)
C(57)-C(67)-C(61)	130.9(3)
O(2)-C(67)-C(61)	112.5(3)

Symmetry transformations used to generate equivalent atoms:

Table 4. Anisotropic displacement parameters (A^2 x 10^3) for p.
The anisotropic displacement factor exponent takes the form:
-2 pi^2 [h^2 a*^2 U11 ... 2 h k a* b* U12]

	U11	U22	U33	U23	U13	U12
Ge(1)	35(1)	48(1)	48(1)	-18(1)	0(1)	-2(1)
P(1)	39(1)	49(1)	53(1)	-23(1)	-2(1)	-8(1)
P(2)	34(1)	47(1)	50(1)	-20(1)	-3(1)	-5(1)
Si(1)	67(1)	68(1)	74(1)	-38(1)	17(1)	-12(1)
Si(2)	64(1)	62(1)	80(1)	-41(1)	-6(1)	-9(1)
O(1)	35(1)	56(2)	49(2)	-12(1)	1(1)	1(1)
O(2)	40(1)	52(2)	58(2)	-11(1)	5(1)	-3(1)
N(1)	55(2)	58(2)	62(2)	-27(2)	8(2)	-11(2)
N(2)	39(2)	50(2)	55(2)	-24(2)	-4(1)	-4(1)
C(1)	219(13)	670(30)	410(20)	-480(30)	-57(14)	81(17)
C(2)	272(13)	139(8)	194(10)	-4(7)	93(9)	118(8)
C(3)	236(12)	212(11)	610(30)	-250(16)	327(17)	-135(10)
C(4)	34(2)	50(2)	55(2)	-24(2)	-2(2)	-4(2)
C(5)	87(4)	147(6)	133(5)	-83(5)	-20(4)	-33(4)
C(6)	162(7)	48(3)	127(5)	-21(3)	-13(5)	-15(4)
C(7)	76(3)	106(4)	112(4)	-78(4)	-7(3)	1(3)
C(11)	51(2)	59(3)	81(3)	-31(2)	-20(2)	-8(2)
C(12)	52(3)	89(4)	113(4)	-42(3)	-14(3)	-20(3)
C(13)	56(3)	148(7)	180(8)	-71(6)	-17(4)	-32(4)
C(14)	85(5)	134(6)	228(11)	-91(7)	-81(6)	2(5)
C(15)	120(6)	133(6)	156(7)	-61(5)	-89(6)	1(5)
C(16)	90(4)	84(4)	98(4)	-41(3)	-43(3)	-7(3)
C(21)	47(2)	48(2)	62(3)	-22(2)	7(2)	-10(2)
C(22)	85(4)	58(3)	104(4)	-32(3)	-8(3)	-17(3)
C(23)	104(5)	60(4)	140(6)	-43(4)	15(4)	-25(3)
C(24)	84(4)	54(3)	120(5)	-17(4)	26(4)	-4(3)
C(25)	87(4)	75(4)	93(4)	-6(3)	-9(3)	-6(3)
C(26)	83(3)	58(3)	77(3)	-10(3)	-15(3)	-14(3)
C(31)	45(2)	50(2)	60(3)	-23(2)	5(2)	-9(2)
C(32)	65(3)	70(3)	63(3)	-23(2)	5(2)	-21(2)
C(33)	106(4)	71(3)	69(3)	-20(3)	14(3)	-30(3)
C(34)	102(5)	78(4)	86(4)	-24(3)	29(4)	-36(4)
C(35)	70(3)	89(4)	124(5)	-36(4)	12(3)	-39(3)
C(36)	53(3)	72(3)	90(3)	-24(3)	-2(2)	-22(2)
C(41)	48(2)	50(2)	74(3)	-24(2)	-19(2)	-3(2)
C(42)	88(4)	72(3)	68(3)	-22(3)	-24(3)	10(3)
C(43)	140(6)	83(4)	104(5)	-17(4)	-60(5)	11(4)
C(44)	106(5)	71(4)	156(7)	-17(5)	-66(5)	11(4)
C(45)	55(3)	82(4)	177(7)	-32(5)	-21(4)	10(3)
C(46)	47(3)	62(3)	113(4)	-24(3)	-5(3)	0(2)
C(51)	36(2)	55(2)	53(2)	-21(2)	-5(2)	-3(2)
C(52)	49(2)	80(3)	59(3)	-10(2)	-3(2)	2(2)
C(53)	68(3)	86(4)	66(3)	0(3)	-14(3)	2(3)
C(54)	51(3)	65(3)	86(4)	-18(3)	-13(2)	10(2)
C(55)	58(3)	69(3)	108(4)	-14(3)	20(3)	9(3)
C(56)	61(3)	56(3)	88(4)	-1(3)	18(3)	6(2)
C(57)	33(2)	58(2)	46(2)	-19(2)	0(2)	-5(2)

C(61)	42(2)	48(2)	51(2)	-14(2)	1(2)	-8(2)
C(62)	65(3)	138(5)	69(3)	-50(3)	15(2)	-50(3)
C(63)	90(4)	178(7)	64(3)	-57(4)	14(3)	-50(4)
C(64)	66(3)	111(4)	72(4)	-18(3)	22(3)	-29(3)
C(65)	52(3)	90(4)	97(4)	-23(3)	3(3)	-29(3)
C(66)	52(3)	83(3)	66(3)	-21(3)	-4(2)	-20(2)
C(67)	35(2)	49(2)	54(2)	-20(2)	1(2)	-3(2)

Table 5. Hydrogen coordinates (x 10^4) and isotropic displacement parameters (A^2 x 10^3) for p.

	x	y	z	U(eq)
H(1B)	3617	8520	5979	565
H(1C)	2512	9491	5921	565
H(1D)	3797	9636	5288	565
H(2A)	1725	10254	3488	434
H(2B)	2639	10712	3702	434
H(2C)	1370	10577	4367	434
H(3A)	1363	8080	4861	573
H(3B)	1025	8550	5647	573
H(3C)	2095	7555	5705	573
H(5A)	4179	6360	372	164
H(5B)	3289	5902	1301	164
H(5C)	4140	5176	763	164
H(6A)	5812	4136	3052	180
H(6B)	5232	3693	2550	180
H(6C)	4376	4424	3081	180
H(7A)	7494	5018	1276	137
H(7B)	6958	5812	367	137
H(7C)	6936	4628	717	137
H(12A)	7569	8504	2313	98
H(13A)	9470	7968	2817	147
H(14A)	9549	7400	4381	162
H(15A)	7799	7285	5461	152
H(16A)	5882	7780	4983	102
H(22A)	5850	10309	3084	99
H(23A)	5493	12062	2154	126
H(24A)	4369	12695	971	123
H(25A)	3545	11601	715	117
H(26A)	3944	9830	1600	93
H(32A)	4293	6249	4381	81
H(33A)	3277	5100	5656	105
H(34A)	1757	4518	5482	115
H(35A)	1091	5177	4054	115
H(36A)	2092	6354	2750	88
H(42A)	4238	8269	484	98
H(43A)	3021	9715	-467	138
H(44A)	1122	10455	177	141
H(45A)	450	9817	1745	138
H(46A)	1684	8400	2737	98
H(52A)	8902	4305	3339	87
H(53A)	10430	2817	3763	104
H(54A)	12297	2662	2801	91
H(55A)	12619	3960	1412	116
H(56A)	11112	5456	947	106
H(62A)	8861	6968	-659	102
H(63A)	10231	7574	-2002	128
H(64A)	11896	8067	-1943	112
H(65A)	12141	8093	-584	100
H(66A)	10756	7516	777	83