C(18)-C(17)-O(5)	124.6(2)
C(17)-C(18)-C(19)	114.0(2)
C(17)-C(18)-C(23)	122.6(2)
C(19)-C(18)-C(23)	123.5(2)
C(20)-C(19)-C(18)	122.4(2)
C(19)-C(20)-C(21)	122.5(2)
C(22)-C(21)-C(20)	114.1(2)
C(22)-C(21)-C(24)	122.9(2)
C(20)-C(21)-C(24)	123.0(2)
C(17)-C(22)-C(21)	123.8(2)
C(17)-C(22)-O(6)	111.7(2)
C(21)-C(22)-O(6)	124.5(2)
C(103)-O(7)-C(100)	109.0(3)
C(101)-O(8)-C(102)	111.6(3)
O(7)-C(100)-C(101)	111.4(3)
O(8)-C(101)-C(100)	111.3(3)
O(8)-C(102)-C(103)	111.9(4)
O(7)-C(103)-C(102)	112.9(3)

Table 5b. Hydrogen coordinates (× 10^4) and isotropic displacement parameters ($Å^2 \times 10^3$) for the dioxane-**4** adduct.

	x	y	z	U(eq)
H(3B)	1343(3)	1388(1)	7778(2)	45
H(4A)	3790(3)	1390(1)	7680(2)	46
H(7A)	-940(3)	1951(2)	7772(2)	62
H(7B)	-1194(3)	2559(2)	7122(2)	62
H(7C)	-780(3)	2723(2)	8078(2)	62
H(8A)	6016(3)	1943(2)	7479(2)	66
H(8B)	6084(3)	2720(2)	7775(2)	66
H(8C)	5800(3)	2543(2)	6815(2)	66
H(11A)	4914(3)	6645(2)	11117(2)	44
H(12A)	2475(3)	6631(2)	11211(2)	45
H(15A)	6979(3)	6397(2)	10418(2)	62
H(15B)	6595(3)	6413(2)	9440(2)	62
H(15C)	6815(3)	5701(2)	9910(2)	62
H(16A)	-5(3)	6326(2)	10706(2)	65
H(16B)	-130(3)	5626(2)	10203(2)	65
H(16C)	-314(3)	6336(2)	9724(2)	65
H(19A)	2886(3)	7515(1)	4178(2)	41
H(20A)	416(3)	7525(1)	4212(2)	39
H(23A)	5285(3)	7074(2)	4607(2)	63
H(23B)	5310(3)	6275(2)	4799(2)	63
H(23C)	5481(3)	6812(2)	5538(2)	63
H(24A)	-1758(3)	7098(2)	4678(2)	55
H(24B)	-1507(3)	6822(2)	5603(2)	55
H(24C)	-1710(3)	6296(2)	4852(2)	55
H(10A)	1346(4)	5048(2)	4146(2)	63
H(10B)	1706(4)	5758(2)	3738(2)	63
H(10C)	3858(4)	5229(2)	4265(3)	75
H(10D)	3413(4)	4555(2)	3744(3)	75
H(10E)	3267(5)	4657(2)	2211(3)	92
H(10F)	3594(5)	5393(2)	1861(3)	92
H(10G)	1553(4)	5834(2)	2295(3)	75
H(10H)	1117(4)	5174(2)	1749(3)	75

Table 2c. Atomic coordinates (x 10^4) and equivalent isotropic displacement parameters ($Å^2$x 10^3) for the poly(tetramethylene oxide)-**4** adduct. U(eq) is defined as one third of the trace of the orthogonalized U^{ij} tensor.

	x	y	z	U(eq)
P(1)	5438(1)	3625(1)	7500	23(1)
O(1)	4612(1)	3816(1)	6588(1)	30(1)
O(2)	0	0	5000	223(6)
N(1)	6949(2)	4814(2)	7500	29(1)
C(1)	3535(1)	3926(2)	6979(1)	27(1)
C(2)	2599(2)	4060(2)	6405(1)	39(1)
C(3)	1614(2)	4149(2)	6972(2)	49(1)
C(4)	2649(3)	4091(3)	5269(2)	60(1)
C(5)	0	0	6971(15)	239(7)
C(6)	0	0	6073(18)	261(8)

Table 3c. Bond lengths [Å] and angles [°] for the poly(tetramethylene oxide)-4 adduct.

P(1)-N(1)	1.5839(16)
P(1)-N(1)#1	1.5875(16)
P(1)-O(1)#2	1.6213(10)
P(1)-O(1)	1.6214(10)
O(1)-C(1)	1.4060(16)
O(2)-C(6)#3	1.43(2)
O(2)-C(6)	1.43(2)
N(1)-P(1)#4	1.5875(16)
C(1)-C(1)#2	1.388(3)
C(1)-C(2)	1.389(2)
C(2)-C(3)	1.406(2)
C(2)-C(4)	1.514(3)
C(3)-C(3)#2	1.406(4)
C(5)-C(6)	1.20(3)
C(5)-C(5)#2	1.41(4)
N(1)-P(1)-N(1)#1	117.36(11)
N(1)-P(1)-O(1)#2	110.27(6)
N(1)#1-P(1)-O(1)#2	110.04(6)
N(1)-P(1)-O(1)	110.27(6)
N(1)#1-P(1)-O(1)	110.04(6)
O(1)#2-P(1)-O(1)	96.97(8)
C(1)-O(1)-P(1)	109.63(9)
C(6)#3-O(2)-C(6)	180.000(4)
P(1)-N(1)-P(1)#4	122.64(11)
C(1)#2-C(1)-C(2)	123.39(9)
C(1)#2-C(1)-O(1)	111.72(7)
C(2)-C(1)-O(1)	124.87(13)
C(1)-C(2)-C(3)	114.10(15)
C(1)-C(2)-C(4)	122.02(15)
C(3)-C(2)-C(4)	123.88(15)
C(2)-C(3)-C(3)#2	122.48(10)
C(6)-C(5)-C(5)#2	180.000(8)
C(5)-C(6)-O(2)	180.000(4)

Symmetry transformations used to generate equivalent atoms:

#1 -y+1,x-y,z #2 x,y,-z+3/2 #3 -x,-y,-z+1

#4 -x+y+1,-x+1,z

Table 1c. Crystal data and structure refinement for the poly(tetramethylene oxide)-**4** adduct.

Identification code	hra08	
Empirical formula	C28 H32 N3 O7 P3	
Formula weight	615.48	
Temperature	198(2) K	
Wavelength	0.71073 Å	
Crystal system	Hexagonal	
Space group	P6(3)/m	
Unit cell dimensions	a = 11.4902(2) Å	α= 90°.
	b = 11.4902(2) Å	β= 90°.
	c = 13.3138(3) Å	γ = 120°.
Volume	1522.26(5) $Å^3$	
Z	2	
Density (calculated)	1.343 Mg/m^3	
Absorption coefficient	0.244 mm^{-1}	
F(000)	644	
Crystal size	0.50 x 0.50 x 0.40 mm^3	
Theta range for data collection	2.56 to 28.14°.	
Index ranges	-15<=h<=15, -15<=k<=15, -17<=l<=17	
Reflections collected	6242	
Independent reflections	1244 [R(int) = 0.0218]	
Completeness to theta = 28.14°	95.3 %	
Absorption correction	None	
Max. and min. transmission	0.9087 and 0.8877	
Refinement method	Full-matrix least-squares on F^2	
Data / restraints / parameters	1244 / 0 / 64	
Goodness-of-fit on F^2	1.319	
Final R indices [I>2sigma(I)]	R1 = 0.0398, wR2 = 0.1468	
R indices (all data)	R1 = 0.0437, wR2 = 0.1520	
Largest diff. peak and hole	0.477 and -0.356 e.$Å^{-3}$	

Table 4c. Anisotropic displacement parameters ($Å^2 x 10^3$) for the poly(tetramethylene oxide)-**4** adduct. The anisotropic displacement factor exponent takes the form: $-2\pi^2[h^2 a^{*2}U^{11} + ... + 2 h k a^* b^* U^{12}]$

	U^{11}	U^{22}	U^{33}	U^{23}	U^{13}	U^{12}
P(1)	23(1)	26(1)	22(1)	0	0	14(1)
O(1)	31(1)	44(1)	22(1)	1(1)	0(1)	25(1)
N(1)	26(1)	24(1)	37(1)	0	0	13(1)
C(1)	27(1)	32(1)	28(1)	-1(1)	0(1)	18(1)
C(2)	41(1)	51(1)	35(1)	2(1)	-5(1)	32(1)
C(3)	47(1)	75(1)	47(1)	0(1)	-5(1)	47(1)
C(4)	66(1)	101(2)	34(1)	6(1)	-9(1)	58(1)

Table 5c. Hydrogen coordinates (x 10^4) and isotropic displacement parameters ($Å^2$x 10^3) for the poly(tetramethylene oxide)-**4** adduct.

	x	y	z	U(eq)
H(3A)	923	4212	6629	59
H(4A)	1906	4190	5007	89
H(4B)	2567	3251	5018	89
H(4C)	3506	4851	5045	89