SUPPORTING INFORMATION

Practical Synthesis of the Shi's Diester Fructose Derivative for Catalytic Asymmetric Epoxidation of Alkenes

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I)	X-Ray data for compound 6	S2
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I) X-Ray data for compound 6

Ortep-Plot (ellipsoids drawn a 50% probability level) of the molecular structure of **6**

Table 1. Crystal data and structure refinement for **6**.

Identification code	nn43a2a_0m
Empirical formula	C11 H14 O6
Formula weight	242.22
Temperature	100(2) K
Wavelength	0.71073 Å
Crystal system	Orthorhombic
Space group	$P2_12_12_1$
Unit cell dimensions	$a = 5.3840(5)$ Å $a = 90^\circ$. $b = 12.0829(12)$ Å $b = 90^\circ$. $c = 17.7316(16)$ Å $c = 90^\circ$.
Volume	$1153.52(19)$ Å ³
Z	4
Density (calculated)	1.395 Mg/m ³
Absorption coefficient	0.115 mm ⁻¹
F(000)	512
Crystal size	$0.40 \times 0.04 \times 0.02$ mm ³
Theta range for data collection	2.85 to 40.31° .
Index ranges	$-9 \leq h \leq 9$, $-21 \leq k \leq 17$, $-32 \leq l \leq 28$
Reflections collected	27298
Independent reflections	7110 [$R(\text{int}) = 0.0299$]
Completeness to $\theta = 40.31^\circ$	98.6 %
Absorption correction	SADABS (Bruker-Nonius)
Refinement method	Full-matrix least-squares on F^2
Data / restraints / parameters	7110 / 0 / 229
Goodness-of-fit on F^2	1.101
Final R indices [$I > 2\sigma(I)$]	$R1 = 0.0378$, $wR2 = 0.1030$
R indices (all data)	$R1 = 0.0389$, $wR2 = 0.1045$
Absolute structure parameter	0.1(4)
Largest diff. peak and hole	0.437 and -0.514 e.Å ⁻³

Table 2. Bond lengths [Å] and angles [°] for **6**.

O(1)-C(5)	1.3995(7)	C(6)-C(8)	1.5103(10)	O(2')-C(4')	1.214(2)
O(1)-C(1)	1.4238(9)	C(6)-C(9)	1.5207(9)	O(5')-C(10')	1.366(2)
C(1)-C(2')	1.489(2)	C(7)-O(4)	1.4291(7)	O(5')-C(3')	1.3973(19)
C(1)-C(2)	1.5021(16)	O(2)-C(4)	1.2151(12)	C(2')-C(3')	1.338(3)
C(5)-O(3)	1.4155(7)	O(5)-C(10)	1.3627(11)	C(3')-C(4')	1.471(2)
C(5)-C(7)	1.5240(8)	O(5)-C(3)	1.3951(11)	C(10')-O(6')	1.204(2)
C(5)-C(4)	1.5246(10)	C(2)-C(3)	1.3269(15)	C(10')-	1.527(9)
C(5)-C(4')	1.5852(18)	C(3)-C(4)	1.4704(12)	C(11')	
C(6)-O(4)	1.4173(7)	C(10)-O(6)	1.2024(12)		
C(6)-O(3)	1.4442(7)	C(10)-C(11)	1.468(4)		
C(5)-O(1)-C(1)	114.28(5)	C(10)-O(5)-C(3)	115.80(7)		
O(1)-C(1)-C(2')	108.46(10)	C(3)-C(2)-C(1)	120.65(9)		
O(1)-C(1)-C(2)	115.50(6)	C(2)-C(3)-O(5)	121.41(9)		
C(2')-C(1)-C(2)	18.92(9)	C(2)-C(3)-C(4)	121.48(8)		
O(1)-C(5)-O(3)	111.45(5)	O(5)-C(3)-C(4)	116.28(8)		
O(1)-C(5)-C(7)	109.06(5)	O(2)-C(4)-C(3)	123.02(9)		
O(3)-C(5)-C(7)	104.32(4)	O(2)-C(4)-C(5)	122.82(8)		
O(1)-C(5)-C(4)	112.79(5)	C(3)-C(4)-C(5)	113.77(7)		
O(3)-C(5)-C(4)	99.53(6)	O(6)-C(10)-O(5)	122.35(8)		
C(7)-C(5)-C(4)	118.87(6)	O(6)-C(10)-C(11)	124.76(14)		
O(1)-C(5)-C(4')	103.99(8)	O(5)-C(10)-C(11)	112.88(14)		
O(3)-C(5)-C(4')	116.81(9)	C(10')-O(5')-C(3')	114.66(12)		
C(7)-C(5)-C(4')	111.17(8)	C(3')-C(2')-C(1)	122.07(16)		
C(4)-C(5)-C(4')	17.28(6)	C(2')-C(3')-O(5')	121.81(15)		
O(4)-C(6)-O(3)	104.51(4)	C(2')-C(3')-C(4')	121.09(15)		
O(4)-C(6)-C(8)	109.54(6)	O(5')-C(3')-C(4')	117.08(13)		
O(3)-C(6)-C(8)	108.35(6)	O(2')-C(4')-C(3')	123.09(16)		
O(4)-C(6)-C(9)	111.65(5)	O(2')-C(4')-C(5)	123.37(15)		
O(3)-C(6)-C(9)	109.24(5)	C(3')-C(4')-C(5)	112.98(13)		
C(8)-C(6)-C(9)	113.14(6)	O(6')-C(10')-O(5')	122.25(14)		
O(4)-C(7)-C(5)	103.04(4)	O(6')-C(10')-C(11')	124.3(4)		
C(5)-O(3)-C(6)	109.33(4)	O(5')-C(10')-C(11')	113.2(4)		
C(6)-O(4)-C(7)	106.05(4)				

Table 3. Torsion angles [°] for **6**.

C(5)-O(1)-C(1)-C(2')	-58.79(12)	O(1)-C(5)-C(4)-O(2)	148.28(12)
C(5)-O(1)-C(1)-C(2)	-39.82(10)	O(3)-C(5)-C(4)-O(2)	-93.50(13)
C(1)-O(1)-C(5)-O(3)	-55.67(6)	C(7)-C(5)-C(4)-O(2)	18.77(16)
C(1)-O(1)-C(5)-C(7)	-170.32(5)	C(4')-C(5)-C(4)-O(2)	86.2(3)
C(1)-O(1)-C(5)-C(4)	55.31(8)	O(1)-C(5)-C(4)-C(3)	-38.65(11)
C(1)-O(1)-C(5)-C(4')	71.01(9)	O(3)-C(5)-C(4)-C(3)	79.56(9)
O(1)-C(5)-C(7)-O(4)	96.53(5)	C(7)-C(5)-C(4)-C(3)	-168.17(7)
O(3)-C(5)-C(7)-O(4)	-22.65(6)	C(4')-C(5)-C(4)-C(3)	-100.8(3)
C(4)-C(5)-C(7)-O(4)	-132.28(7)	C(3)-O(5)-C(10)-O(6)	-7.53(14)
C(4')-C(5)-C(7)-O(4)	-149.39(9)	C(3)-O(5)-C(10)-C(11)	171.5(2)
O(1)-C(5)-O(3)-C(6)	-115.25(5)	O(1)-C(1)-C(2')-C(3')	16.2(3)
C(7)-C(5)-O(3)-C(6)	2.30(7)	C(2)-C(1)-C(2')-C(3')	-99.0(4)
C(4)-C(5)-O(3)-C(6)	125.53(6)	C(1)-C(2')-C(3')-O(5')	-175.66(17)
C(4')-C(5)-O(3)-C(6)	125.43(8)	C(1)-C(2')-C(3')-C(4')	6.1(4)
O(4)-C(6)-O(3)-C(5)	19.21(7)	C(10')-O(5')-C(3')-C(2')	-106.9(2)
C(8)-C(6)-O(3)-C(5)	135.94(6)	C(10')-O(5')-C(3')-C(4')	71.3(2)
C(9)-C(6)-O(3)-C(5)	-100.40(6)	C(2')-C(3')-C(4')-O(2')	179.1(2)
O(3)-C(6)-O(4)-C(7)	-34.25(6)	O(5')-C(3')-C(4')-O(2')	0.8(3)
C(8)-C(6)-O(4)-C(7)	-150.16(5)	C(2')-C(3')-C(4')-C(5)	7.4(3)
C(9)-C(6)-O(4)-C(7)	83.71(6)	O(5')-C(3')-C(4')-C(5)	-170.86(13)
C(5)-C(7)-O(4)-C(6)	35.24(6)	O(1)-C(5)-C(4')-O(2')	146.2(2)
O(1)-C(1)-C(2)-C(3)	7.22(16)	O(3)-C(5)-C(4')-O(2')	-90.6(2)
C(2')-C(1)-C(2)-C(3)	79.2(3)	C(7)-C(5)-C(4')-O(2')	28.9(2)
C(1)-C(2)-C(3)-O(5)	177.45(10)	C(4)-C(5)-C(4')-O(2')	-90.9(3)
C(1)-C(2)-C(3)-C(4)	8.27(19)	O(1)-C(5)-C(4')-C(3')	-42.20(17)
C(10)-O(5)-C(3)-C(2)	113.21(12)	O(3)-C(5)-C(4')-C(3')	81.04(16)
C(10)-O(5)-C(3)-C(4)	-77.07(11)	C(7)-C(5)-C(4')-C(3')	-159.42(13)
C(2)-C(3)-C(4)-O(2)	-179.83(14)	C(4)-C(5)-C(4')-C(3')	80.7(3)
O(5)-C(3)-C(4)-O(2)	10.46(17)	C(3')-O(5')-C(10')-O(6')	2.4(2)
C(2)-C(3)-C(4)-C(5)	7.12(16)	C(3')-O(5')-C(10')-C(11')	177.0(5)
O(5)-C(3)-C(4)-C(5)	-162.59(8)		

II) X-Ray data for compound **7**

Table 4. Crystal data and structure refinement for **7**.

Identification code	nn152mono
Empirical formula	C13 H20 O9
Formula weight	320.29
Temperature	100(2) K
Wavelength	0.71073 Å
Crystal system	Orthorhombic
Space group	$P2_12_12$
Unit cell dimensions	$a = 22.246(11)$ Å $a = 90^\circ$. $b = 23.698(11)$ Å $b = 90^\circ$. $c = 5.599(2)$ Å $c = 90^\circ$.
Volume	$2952(2)$ Å ³
Z	8
Density (calculated)	1.441 Mg/m ³
Absorption coefficient	0.123 mm ⁻¹
F(000)	1360
Crystal size	0.30 x 0.01 x 0.01 mm ³ *
Theta range for data collection	2.51 to 23.50°.*
Index ranges	$-22 \leq h \leq 24$, $-26 \leq k \leq 26$, $-6 \leq l \leq 6$
Reflections collected	21494
Independent reflections	4304 [R(int) = 0.2741]
Completeness to theta = 23.50°	98.6 %
Absorption correction	SADABS (Bruker-Nonius)
Max. and min. transmission	0.9988 and 0.9640
Refinement method	Full-matrix least-squares on F ²
Data / restraints / parameters	4304 / 72 / 409
Goodness-of-fit on F ²	0.979
Final R indices [I>2sigma(I)]	R1 = 0.0701, wR2 = 0.1512
R indices (all data)	R1 = 0.1505, wR2 = 0.1906
Absolute structure parameter	-2(2)
Largest diff. peak and hole	0.401 and -0.463 e.Å ⁻³

* Only extrem small crystal needles of **7** could be grown. The structure obtained using this crystal needles is of low resolution but of enough quality to unambiguously confirm the structure.

Table 5. Bond lengths [Å] and angles [°] for **7**.

O(1B)-C(1B)	1.402(8)	C(6B)-C(7B)	1.533(10)	O(3A)-C(7A)	1.430(8)
O(1B)-C(2B)	1.445(8)	O(6B)-C(10B)	1.356(8)	C(4A)-O(5A)	1.387(8)
C(1B)-O(3B)	1.440(9)	O(7B)-C(10B)	1.200(8)	C(4A)-O(4A)	1.401(9)
C(1B)-C(3B)	1.513(10)	O(8B)-C(13B)	1.355(9)	C(4A)-C(5A)	1.513(9)
C(1B)-C(4B)	1.538(10)	O(9B)-C(13B)	1.201(8)	C(5A)-O(6A)	1.461(8)
O(2B)-C(3B)	1.410(8)	C(10B)-C(12B)	1.484(10)	C(5A)-C(6A)	1.538(10)
O(2B)-C(2B)	1.413(8)	C(13B)-C(14B)	1.480(10)	C(6A)-O(8A)	1.444(8)
C(2B)-C(9B)	1.490(10)	C(1A)-O(3A)	1.404(9)	C(6A)-C(7A)	1.517(10)
C(2B)-C(8B)	1.526(10)	C(1A)-O(1A)	1.408(8)	O(6A)-C(10A)	1.365(8)
O(3B)-C(7B)	1.397(8)	C(1A)-C(3A)	1.523(9)	O(7A)-C(10A)	1.212(8)
C(4B)-O(5B)	1.397(8)	C(1A)-C(4A)	1.575(10)	O(8A)-C(13A)	1.339(9)
C(4B)-O(4B)	1.398(9)	O(1A)-C(2A)	1.438(8)	O(9A)-C(13A)	1.196(9)
C(4B)-C(5B)	1.528(10)	C(2A)-O(2A)	1.421(8)	C(10A)-C(11A)	1.466(10)
C(5B)-O(6B)	1.448(8)	C(2A)-C(8A)	1.487(10)	C(13A)-C(14A)	1.486(10)
C(5B)-C(6B)	1.528(10)	C(2A)-C(9A)	1.523(10)		
C(6B)-O(8B)	1.460(8)	O(2A)-C(3A)	1.402(8)		
C(1B)-O(1B)-C(2B)	107.0(5)	O(5B)-C(4B)-C(5B)	113.2(6)		
O(1B)-C(1B)-O(3B)	111.3(6)	O(4B)-C(4B)-C(5B)	110.9(6)		
O(1B)-C(1B)-C(3B)	104.8(5)	O(5B)-C(4B)-C(1B)	104.2(6)		
O(3B)-C(1B)-C(3B)	107.4(6)	O(4B)-C(4B)-C(1B)	110.8(6)		
O(1B)-C(1B)-C(4B)	109.6(6)	C(5B)-C(4B)-C(1B)	110.8(6)		
O(3B)-C(1B)-C(4B)	109.1(5)	O(6B)-C(5B)-C(4B)	106.3(5)		
C(3B)-C(1B)-C(4B)	114.5(6)	O(6B)-C(5B)-C(6B)	108.7(6)		
C(3B)-O(2B)-C(2B)	107.2(5)	C(4B)-C(5B)-C(6B)	113.5(6)		
O(2B)-C(2B)-O(1B)	104.3(5)	O(8B)-C(6B)-C(5B)	111.4(6)		
O(2B)-C(2B)-C(9B)	109.7(6)	O(8B)-C(6B)-C(7B)	106.9(6)		
O(1B)-C(2B)-C(9B)	109.6(5)	C(5B)-C(6B)-C(7B)	108.3(6)		
O(2B)-C(2B)-C(8B)	111.5(6)	C(10B)-O(6B)-C(5B)	117.2(5)		
O(1B)-C(2B)-C(8B)	109.7(6)	O(3B)-C(7B)-C(6B)	112.1(5)		
C(9B)-C(2B)-C(8B)	111.9(6)	C(13B)-O(8B)-C(6B)	117.2(5)		
C(7B)-O(3B)-C(1B)	113.7(5)	O(7B)-C(10B)-O(6B)	124.2(7)		
O(2B)-C(3B)-C(1B)	105.8(5)	O(7B)-C(10B)-C(12B)	124.6(7)		
O(5B)-C(4B)-O(4B)	106.8(5)	O(6B)-C(10B)-C(12B)	111.2(6)		

O(9B)-C(13B)-O(8B)	122.8(7)	O(5A)-C(4A)-C(5A)	116.0(6)
O(9B)-C(13B)-C(14B)	126.6(7)	O(4A)-C(4A)-C(5A)	111.6(6)
O(8B)-C(13B)-C(14B)	110.6(6)	O(5A)-C(4A)-C(1A)	103.3(5)
O(3A)-C(1A)-O(1A)	112.1(5)	O(4A)-C(4A)-C(1A)	110.0(6)
O(3A)-C(1A)-C(3A)	108.0(6)	C(5A)-C(4A)-C(1A)	108.3(6)
O(1A)-C(1A)-C(3A)	104.4(6)	O(6A)-C(5A)-C(4A)	105.6(5)
O(3A)-C(1A)-C(4A)	110.7(6)	O(6A)-C(5A)-C(6A)	109.1(5)
O(1A)-C(1A)-C(4A)	108.3(5)	C(4A)-C(5A)-C(6A)	112.6(6)
C(3A)-C(1A)-C(4A)	113.3(6)	O(8A)-C(6A)-C(7A)	109.2(6)
C(1A)-O(1A)-C(2A)	108.0(5)	O(8A)-C(6A)-C(5A)	109.9(5)
O(2A)-C(2A)-O(1A)	104.3(5)	C(7A)-C(6A)-C(5A)	109.9(6)
O(2A)-C(2A)-C(8A)	109.3(6)	C(10A)-O(6A)-C(5A)	117.1(5)
O(1A)-C(2A)-C(8A)	109.0(6)	O(3A)-C(7A)-C(6A)	110.5(6)
O(2A)-C(2A)-C(9A)	111.2(6)	C(13A)-O(8A)-C(6A)	118.2(6)
O(1A)-C(2A)-C(9A)	109.2(5)	O(7A)-C(10A)-O(6A)	122.8(7)
C(8A)-C(2A)-C(9A)	113.5(6)	O(7A)-C(10A)-C(11A)	126.2(7)
C(3A)-O(2A)-C(2A)	107.9(5)	O(6A)-C(10A)-C(11A)	110.9(6)
O(2A)-C(3A)-C(1A)	105.9(5)	O(9A)-C(13A)-O(8A)	123.3(7)
C(1A)-O(3A)-C(7A)	113.9(5)	O(9A)-C(13A)-C(14A)	125.9(7)
O(5A)-C(4A)-O(4A)	107.3(5)	O(8A)-C(13A)-C(14A)	110.8(7)

Table 6. Torsion angles [$^{\circ}$] for **7**.

C(2B)-O(1B)-C(1B)-O(3B)	-94.6(6)	C(4B)-C(1B)-C(3B)-O(2B)	-122.1(6)
C(2B)-O(1B)-C(1B)-C(3B)	21.2(7)	O(1B)-C(1B)-C(4B)-O(5B)	-168.4(5)
C(2B)-O(1B)-C(1B)-C(4B)	144.5(6)	O(3B)-C(1B)-C(4B)-O(5B)	69.4(7)
C(3B)-O(2B)-C(2B)-O(1B)	31.5(7)	C(3B)-C(1B)-C(4B)-O(5B)	-51.0(8)
C(3B)-O(2B)-C(2B)-C(9B)	148.7(6)	O(1B)-C(1B)-C(4B)-O(4B)	-53.9(8)
C(3B)-O(2B)-C(2B)-C(8B)	-86.8(7)	O(3B)-C(1B)-C(4B)-O(4B)	-176.1(5)
C(1B)-O(1B)-C(2B)-O(2B)	-33.0(7)	C(3B)-C(1B)-C(4B)-O(4B)	63.5(8)
C(1B)-O(1B)-C(2B)-C(9B)	-150.3(6)	O(1B)-C(1B)-C(4B)-C(5B)	69.6(7)
C(1B)-O(1B)-C(2B)-C(8B)	86.5(6)	O(3B)-C(1B)-C(4B)-C(5B)	-52.6(8)
O(1B)-C(1B)-O(3B)-C(7B)	-59.7(7)	C(3B)-C(1B)-C(4B)-C(5B)	-173.1(6)
C(3B)-C(1B)-O(3B)-C(7B)	-174.0(6)	O(5B)-C(4B)-C(5B)-O(6B)	52.3(8)
C(4B)-C(1B)-O(3B)-C(7B)	61.4(7)	O(4B)-C(4B)-C(5B)-O(6B)	-67.7(7)
C(2B)-O(2B)-C(3B)-C(1B)	-18.4(7)	C(1B)-C(4B)-C(5B)-O(6B)	168.9(5)
O(1B)-C(1B)-C(3B)-O(2B)	-2.0(7)	O(5B)-C(4B)-C(5B)-C(6B)	-67.1(8)
O(3B)-C(1B)-C(3B)-O(2B)	116.5(6)	O(4B)-C(4B)-C(5B)-C(6B)	172.9(6)

C(1B)-C(4B)-C(5B)-C(6B)	49.5(8)	C(4A)-C(1A)-O(3A)-C(7A)	61.4(7)
O(6B)-C(5B)-C(6B)-O(8B)	-49.6(7)	O(3A)-C(1A)-C(4A)-O(5A)	68.9(7)
C(4B)-C(5B)-C(6B)-O(8B)	68.5(7)	O(1A)-C(1A)-C(4A)-O(5A)	-167.9(5)
O(6B)-C(5B)-C(6B)-C(7B)	-166.9(5)	C(3A)-C(1A)-C(4A)-O(5A)	-52.6(7)
C(4B)-C(5B)-C(6B)-C(7B)	-48.8(7)	O(3A)-C(1A)-C(4A)-O(4A)	-176.8(5)
C(4B)-C(5B)-O(6B)-C(10B)	158.3(6)	O(1A)-C(1A)-C(4A)-O(4A)	-53.6(7)
C(6B)-C(5B)-O(6B)-C(10B)	-79.2(7)	C(3A)-C(1A)-C(4A)-O(4A)	61.6(7)
C(1B)-O(3B)-C(7B)-C(6B)	-63.8(7)	O(3A)-C(1A)-C(4A)-C(5A)	-54.6(7)
O(8B)-C(6B)-C(7B)-O(3B)	-65.4(7)	O(1A)-C(1A)-C(4A)-C(5A)	68.6(7)
C(5B)-C(6B)-C(7B)-O(3B)	54.7(7)	C(3A)-C(1A)-C(4A)-C(5A)	-176.1(6)
C(5B)-C(6B)-O(8B)-C(13B)	95.0(7)	O(5A)-C(4A)-C(5A)-O(6A)	54.7(8)
C(7B)-C(6B)-O(8B)-C(13B)	-146.9(6)	O(4A)-C(4A)-C(5A)-O(6A)	-68.6(7)
C(5B)-O(6B)-C(10B)-O(7B)	-7.0(10)	C(1A)-C(4A)-C(5A)-O(6A)	170.1(5)
C(5B)-O(6B)-C(10B)-C(12B)	173.3(6)	O(5A)-C(4A)-C(5A)-C(6A)	-64.3(8)
C(6B)-O(8B)-C(13B)-O(9B)	4.4(10)	O(4A)-C(4A)-C(5A)-C(6A)	172.4(5)
C(6B)-O(8B)-C(13B)-C(14B)	-176.1(6)	C(1A)-C(4A)-C(5A)-C(6A)	51.2(7)
O(3A)-C(1A)-O(1A)-C(2A)	-97.7(6)	O(6A)-C(5A)-C(6A)-O(8A)	-49.1(7)
C(3A)-C(1A)-O(1A)-C(2A)	19.0(7)	C(4A)-C(5A)-C(6A)-O(8A)	67.8(7)
C(4A)-C(1A)-O(1A)-C(2A)	139.9(6)	O(6A)-C(5A)-C(6A)-C(7A)	-169.3(5)
C(1A)-O(1A)-C(2A)-O(2A)	-30.4(7)	C(4A)-C(5A)-C(6A)-C(7A)	-52.4(7)
C(1A)-O(1A)-C(2A)-C(8A)	-147.0(6)	C(4A)-C(5A)-O(6A)-C(10A)	159.2(6)
C(1A)-O(1A)-C(2A)-C(9A)	88.5(6)	C(6A)-C(5A)-O(6A)-C(10A)	-79.6(7)
O(1A)-C(2A)-O(2A)-C(3A)	29.8(7)	C(1A)-O(3A)-C(7A)-C(6A)	-61.7(7)
C(8A)-C(2A)-O(2A)-C(3A)	146.2(6)	O(8A)-C(6A)-C(7A)-O(3A)	-66.0(7)
C(9A)-C(2A)-O(2A)-C(3A)	-87.7(7)	C(5A)-C(6A)-C(7A)-O(3A)	54.6(7)
C(2A)-O(2A)-C(3A)-C(1A)	-18.2(8)	C(7A)-C(6A)-O(8A)-C(13A)	-140.9(6)
O(3A)-C(1A)-C(3A)-O(2A)	118.8(6)	C(5A)-C(6A)-O(8A)-C(13A)	98.5(7)
O(1A)-C(1A)-C(3A)-O(2A)	-0.6(8)	C(5A)-O(6A)-C(10A)-O(7A)	-1.9(10)
C(4A)-C(1A)-C(3A)-O(2A)	-118.1(7)	C(5A)-O(6A)-C(10A)-C(11A)	174.9(6)
O(1A)-C(1A)-O(3A)-C(7A)	-59.6(7)	C(6A)-O(8A)-C(13A)-O(9A)	5.7(11)
C(3A)-C(1A)-O(3A)-C(7A)	-174.0(5)	C(6A)-O(8A)-C(13A)-C(14A)	-173.3(6)

III) NMR Spectra of compounds 4,2,5,3,6 and 7

Compound **4**, CDCl₃, 400 MHz for ¹H and 100 MHz for ¹³C

Compound **2**, CDCl₃, 400 MHz for ¹H and 100 MHz for ¹³C

Compound **5**, CDCl₃, 400 MHz for ¹H and 100 MHz for ¹³C

Compound **3**, CDCl₃, 400 MHz for ¹H and 100 MHz for ¹³C

Compound **6**, CDCl₃. 400 MHz for ¹H and 100 MHz for ¹³C

Compound **7**, D₂O, 500 MHz for ¹H and 125 MHz for ¹³C