

Table 4. Bond Angles(°) for 4 (cont.)

atom	atom	atom	angle	atom	atom	atom	angle
H10	C50	H11	109.5	H10	C50	H12	109.5
H11	C50	H12	109.5	ZR1	C51	C43	73.4(2)
ZR1	C51	C49	72.1(2)	ZR1	C51	C52	130.7(3)
C43	C51	C49	108.7(3)	C43	C51	C52	124.3(3)
C49	C51	C52	125.7(3)	C51	C52	H13	109.5
C51	C52	H14	109.5	C51	C52	H15	109.5
H13	C52	H14	109.5	H13	C52	H15	109.5
H14	C52	H15	109.5	ZR1	C53	C54	131.5(3)
ZR1	C53	C55	72.2(2)	ZR1	C53	C61	73.6(2)
C54	C53	C55	123.2(4)	C54	C53	C61	126.9(4)
C55	C53	C61	108.3(4)	C53	C54	H16	109.5
C53	C54	H17	109.5	C53	C54	H18	109.5
H16	C54	H17	109.4	H16	C54	H18	109.5
H17	C54	H18	109.5	ZR1	C55	C53	75.2(2)
ZR1	C55	C56	124.0(3)	ZR1	C55	C57	74.1(2)
C53	C55	C56	124.1(4)	C53	C55	C57	108.1(4)
C56	C55	C57	127.1(4)	C55	C56	H19	109.4
C55	C56	H20	109.4	C55	C56	H21	109.4
H19	C56	H20	109.5	H19	C56	H21	109.5
H20	C56	H21	109.5	ZR1	C57	C55	73.0(2)
ZR1	C57	C58	120.9(3)	ZR1	C57	C59	74.9(2)
C55	C57	C58	126.4(4)	C55	C57	C59	108.0(4)
C58	C57	C59	125.5(4)	C57	C58	H22	109.4
C57	C58	H23	109.4	C57	C58	H24	109.4
H22	C58	H23	109.5	H22	C58	H24	109.6
H23	C58	H24	109.5	ZR1	C59	C57	72.8(2)
ZR1	C59	C60	125.9(3)	ZR1	C59	C61	73.6(2)
C57	C59	C60	125.4(4)	C57	C59	C61	108.8(4)
C60	C59	C61	125.3(4)	C59	C60	H25	109.5
C59	C60	H26	109.5	C59	C60	H27	109.5
H25	C60	H26	109.5	H25	C60	H27	109.5
H26	C60	H27	109.5	ZR1	C61	C53	73.6(2)
ZR1	C61	C59	73.8(2)	ZR1	C61	C62	127.3(3)
C53	C61	C59	106.7(4)	C53	C61	C62	127.8(4)
C59	C61	C62	124.3(4)	C61	C62	H28	109.4
C61	C62	H29	109.5	C61	C62	H30	109.4
H28	C62	H29	109.5	H28	C62	H30	109.5
H29	C62	H30	109.5	C64	C63	C68	129.4(10)
C64	C63	C69	105.9(10)	C68	C63	C69	124.7(14)
C63	C64	C65	103.9(10)	C63	C64	H31	128.0
C65	C64	H31	128.1	C64	C65	C66	132.0(10)
C64	C65	H32	114.0	C66	C65	H32	114.0
C65	C66	C67	113.2(8)	C65	C66	H33	123.5
C67	C66	H33	123.4	C66	C67	C68	120.9(11)

C66	C67	H34	119.5	C68	C67	H34	119.6
C63	C68	C67	120.5(9)	C63	C68	H35	119.8
C67	C68	H35	119.7	C63	C69	H36	109.7
C63	C69	H37	109.6	C63	C69	H38	109.6
H36	C69	H37	109.4	H36	C69	H38	109.4
H37	C69	H38	109.2	C71	C70	C72	119.4(8)
C71	C70	C73	124.1(12)	C72	C70	C73	116.5(13)
C70	C71	C72	121.8(9)	C70	C72	C71	118.8(10)
