

**APPENDIX III. IONIC RADII IN Å FOR DIFFERENT CHARGES AND COORDINATION NUMBERS\***

Z	Element	Valence	Coordination numbers												
			II	III	IV	V	VI	VII	VIII	IX	X	XII			
1	H	+1						Extremely small							
3	Li	+1			0.68			0.82							
4	Be	+2		0.25	0.35										
5	B	+3		0.10	0.20										
6	C	-4						2.60							
		+4						0.16							
7	N	+3						0.16							
		+5						0.13							
8	O	-2	1.27	1.28	1.30			1.32		1.34					
9	F	-1	1.21	1.22	1.23			1.25							
11	Na	+1			1.07	1.08		1.10	1.21	1.24	1.40				
12	Mg	+2			0.66	0.75		0.80		0.97					
13	Al	+3			0.47	0.56		0.61							
14	Si	+4			0.34			0.48							
15	P	+5			0.25										
16	S	-2			1.56			1.72		1.78					
		+6			0.20										
17	Cl	-1			1.67			1.72		1.65					
		+5		0.20											
		+7			0.28										
19	K	+1						1.46	1.54	1.59	1.63	1.67	1.68		
20	Ca	+2						1.08	1.15	1.20	1.26	1.36	1.43		
21	Sc	+3						0.83		0.95					
22	Ti	+2						0.94							
		+3						0.75							
		+4					0.61	0.69							
23	V	+2						0.87							
		+3						0.72							
		+4						0.67							
		+5			0.44	0.54		0.62							
24	Cr	+2						0.81(L)							
								0.90(H)							
		+3						0.70							
		+4			0.52			0.63							
		+5			0.43										
		+6			0.38										
25	Mn	+2						0.75(L)		1.01					
								0.91(H)							
		+3					0.66	0.66(L)							
								0.73(H)							
		+4						0.62							
		+6			0.35										
		+7			0.34										
26	Fe	+2			0.71(H)			0.69(L)							
								0.86(H)							
		+3			0.57(H)			0.63(L)							
								0.73(H)							

Z	Element	Valence	Coordination numbers											
			II	III	IV	V	VI	VII	VIII	IX	X	XII		
27	Co	+2			0.65(H)			0.73(L)						
		+3						0.83(H)						
								0.61(L)						
								0.69(H)						
28	Ni	+2						0.77						
		+3						0.64(L)						
								0.68(H)						
29	Cu	+1	0.54											
		+2			0.70	0.73		0.81						
30	Zn	+2			0.68	0.76		0.83		0.98				
31	Ga	+3			0.55	0.63		0.70						
32	Ge	+4			0.48			0.62						
33	As	+5			0.42			0.58						
34	Se	-2						1.88		1.90				
		+6			0.37									
35	Br	-1						1.88		1.84				
		+7			0.34									
37	Rb	+1						1.57	1.64	1.68			1.74	1.81
38	Sr	+2						1.21	1.29	1.33			1.40	1.48
39	Y	+3						0.98		1.10	1.18			
40	Zr	+4						0.80	0.86	0.92				
41	Nb	+2						0.79						
		+3						0.78						
		+4						0.77						
		+5			0.40			0.72	0.74					
42	Mo	+3						0.75						
		+4						0.73						
		+5						0.71						
		+6			0.50	0.58		0.68	0.79					
43	Tc	+4						0.72						
44	Ru	+3						0.76						
		+4						0.70						
45	Rh	+3						0.75						
		+4						0.71						
46	Pd	+1	0.67											
		+2			0.72			0.94						
		+3						0.84						
		+4						0.70						
47	Ag	+1	0.75		1.10	1.20		1.23	1.32	1.38				
		+3			0.73									
48	Cd	+2			0.88	0.95		1.03	1.08	1.15				1.39
49	In	+3						0.88		1.00				
50	Sn	+2								1.30				
		+4						0.77						
51	Sb	+3			0.85	0.88								
		+5						0.69						
52	Te	+4		0.60										
53	I	-1						2.13		1.97				
		+5						1.03						

Z	Element	Valence	Coordination numbers										
			II	III	IV	V	VI	VII	VIII	IX	X	XII	
55	Cs	+1						1.78		1.82	1.86	1.89	1.96
56	Ba	+2						1.44	1.47	1.50	1.55	1.60	1.68
57	La	+3						1.13	1.18	1.26	1.28	1.36	1.40
58	Ce	+3						1.09		1.22	1.23		1.37
		+4						0.88		1.05			
59	Pr	+3						1.08		1.22			
		+4						0.86		1.07			
60	Nd	+3						1.06		1.20	1.17		
61	Pm	+3						1.04					
62	Sm	+3						1.04		1.17			
63	Eu	+2						1.25		1.33			
		+3						1.03	1.11	1.15			
64	Gd	+3						1.02	1.12	1.14			
65	Tb	+3						1.00	1.10	1.12			
		+4						0.84		0.96			
66	Dy	+3						0.99		1.11			
67	Ho	+3						0.98		1.10			
68	Er	+3						0.97		1.08			
69	Tm	+3						0.96		1.07			
70	Yb	+3						0.95		1.06			
71	Lu	+3						0.94		1.05			
72	Hf	+4						0.79		0.91			
73	Ta	+3						0.75					
		+4						0.74					
		+5						0.72		0.77			
74	W	+4						0.73					
		+6			0.50			0.68					
75	Re	+4						0.71					
		+5						0.60					
		+6						0.60					
		+7			0.48			0.65					
76	Os	+4						0.71					
77	Ir	+3						0.81					
		+4						0.71					
78	Pt	+2			0.68								
		+4						0.71					
79	Au	+3			0.78								
80	Hg	+1		1.05									
		+2	0.77		1.04			1.10		1.22			
81	Tl	+1						1.58		1.68			1.84
		+3						0.97		1.08			
82	Pb	+2			1.02			1.26		1.37	1.41		1.57
		+4						0.86		1.02			
83	Bi	+3					1.07	1.10		1.19			
84	Po	+4								1.16			
87	Ra	+2								1.56			1.72
90	Th	+4						1.08		1.12	1.17		
91	Pa	+4								1.09			
		+5								0.99	1.03		

Z	Element	Valence	Coordination numbers										
			II	III	IV	V	VI	VII	VIII	IX	X	XII	
92	U	+3						1.12					
		+4							1.06	1.08	1.13		
		+5						0.84	1.04				
		+6	0.53		0.56			0.81	0.96				
93	Np	+2					1.18						
		+3					1.10						
		+4							1.06				
94	Pu	+3					1.09						
		+4					0.88		1.04				
95	Am	+3					1.08						
		+4							1.03				
96	Cm	+3					1.06						
		+4							1.08				
97	Bk	+3					1.04						
		+4							1.01				
98	Cf	+3					1.03						

\*Ionic radii from Whittaker and Muntus, 1970. L = low spin (electrons paired), H = high spin (single electrons).