

Sn(II)—X 和 Sn(IV)—X (X=O, S, N, C, P, As, Se, Te, F, Cl, Br, I) 键价参数

胡盛志^{1,*} 谢兆雄^{1,2} PALENIK G. J.³

¹厦门大学化学系, 福建 厦门 361005; ²厦门大学固体表面物理化学国家重点实验室, 福建 厦门 361005;
³Chemistry Department, The University of Florida, P. O. Box 117200, Gainesville, FL 32611-7200, USA)

Bond Valence Parameters for Sn(II)—X and Sn(IV)—X (X=O, S, N, C, P, As, Se, Te, F, Cl, Br, I)

HU Sheng-Zhi^{1,*} XIE Zhao-Xiong^{1,2} PALENIK G. J.³

¹Department of Chemistry, Xiamen University, Xiamen 361005, Fujian Province, P. R. China; ²State Key Laboratory for Physical Chemistry of Solid Surfaces, Xiamen University, Xiamen 361005, Fujian Province, P. R. China; ³Chemistry Department, The University of Florida, P. O. Box 117200, Gainesville, FL 32611-7200, USA)

*Corresponding author. Email: szhu@xmu.edu.cn; Tel: +86-592-2180297

R_0 values with $b = 0.37 \text{ \AA}$ for homoleptic polyhedra SnX_n obtained from a system analysis of bond length data in the Cambridge Structural Database

I Sn(II) – O

1 ABIBIX(4) 1.958	2 AGEBIX01(4) 1.971	3 AGEBUJ(4) 1.951	4	1.942
5 1.956	6 1.952	7 AGEBUJ(3) 1.961	8	1.964
9 1.963	10 1.970	11 1.971	12	1.967
13 1.977	14 1.961	15 1.932	16	1.972
17 BAHRAE(6) 1.978	18 1.975	19 BARQAN(6) 1.979	20 BIDWIV(4) 1.993	
21 BIVHET(4) 1.932	22 BIWGUJ(4) 1.958	23 1.944	24	1.955
25 BIWHAQ(4) 1.964	26 1.940	27 1.959	28 CIXSEI(6) 1.947	
29 CIXSOS(4) 1.965	30 CIXTIN(6) 1.965	31 1.976	32	1.980
33 1.972	34 COHVEA(4) 2.029	35 2.049	36CUSGUS(6) 1.969	
37 DEPQEV(3) 1.945	38 1.943	39 DEPQIZ(3) 1.949	40	1.949
41 1.947	42 1.956	43 DEPQOF(3) 1.934	44	1.945
45 DPPRSN(5) 1.955	46 DUVNIR(3) 1.943	47 DUVNOX(3) 1.956	48	1.944
49 DUVNUD(3) 1.918	50 DUYLIS(3) 1.929	51 EDTASN(4) 2.005	52 EGEQAJ(4) 1.972	
53 EQUWES(5) 1.958	54 EQUWIW(5) 1.968	55 EQUWOC(6) 1.963	56 EQUWUI(4) 1.947	
57 FULCOE(5) 2.026	58 (5) 1.987	59 (5) 2.044	60 (3) 2.021	
61 (4) 2.026	62 (5) 2.006	63 GAQTEX(3) 1.900	64 GIVDIY(4) 1.978	
65 (5) 2.008	66 GIVDOE(3) 1.965	67 GIVXOY(4) 1.996	68 HOPHOJ(3) 1.946	
69 (3) 1.964	70 JERTIK(4) 1.935	71 1.944	72	1.949
73 1.942	74 1.933	75 1.930	76 JERTOQ(4) 1.927	
77 1.975	78 (3) 1.990	79 1.974	80 JIYNIO(3) 1.922	
81 JOQBEW(4) 1.974	82 1.974	83 JOTHOP(4) 1.960	84	1.934
85 1.960	86 1.951	87KIQHIB (3) 1.955	88	1.944
89 1.969	90 1.945	91KSN0XL(7) 1.944	92KTFORM(4) 2.002	
93 LOBCOU(3) 2.008	94 (4) 1.966	95 (5) 1.985	96 (6) 1.970	
97 LOJCOC(4) 1.960	98 LOJCUI(4) 1.955	99MXSNOX(4) 1.931	100	1.934
01 1.937	02 1.923	03 1.942	04	1.944
05 1.927	06 1.945	07 1.937	08	1.923
09 1.948	10 1.939	11 NINSOT(4) 1.928	12 NINSUZ(4) 1.946	
13 NINTAG(4) 1.895	14 NOWWAX(4) 1.983	15 NTBZSN01(6) 1.989	16 NUKJAE(4) 1.944	
17 01(4) 1.967	18 PAQHIY(4) 1.913	19 PBONSN(4) 1.951	20QAKFIR(5) 1.967	
21 1.976	22 QAXQIP(5) 1.986	23 (4) 1.980	24 (4) 1.981	
25 (4) 1.994	26 QECPET(3) 1.954	27 REGJUI(5) 1.960	28 (4) 1.970	
29 (3) 1.955	30 (3) 1.956	31 REHQUQ(6) 1.976	32 (4) 1.964	
33 (3) 1.933	34 (4) 1.959	35 RELXAH(4) 1.965	36	1.968
37 1.960	38 1.964	39 1.969	40 RELXEL(5) 1.968	
41 (4) 1.971	42 RIZKIU(3) 1.938	43 SANHIZ(6) 1.978	44 SANHIZ(6) 1.978	
45 SIHQEF(6) 1.979	46 SIHQIJ(8) 1.989	47 SIHQOP(4) 1.955	48 SIRJOS(6) 1.988	

49 SIXHUC(4) 1.917	50 SNMAZH(4) 2.012	51 SOHJUU(4) 1.963	52 SOXASN(8) 1.996
53 SRACSN(3) 1.986	54 1.994	55 SUKKUR(4) 1.957	56 SUXLAY(4) 1.934
57 SUZXOA(5) 1.958	58 TACSNC(3) 1.990	59 TINOXL(8) 2.002	60 VEYTEZ(4) 1.980
61 1.996	62 1.986	63 1.960	64 VIMKUX(3) 1.914
65 1.934	66 VOHSA(4) 1.968	67 VUCXIA(3) 1.933	68 VUCXOG(3) 1.936
69 VUCXUM(3) 1.917	70VUCYAT(3) 1.936	71 VUCYEX(3) 1.920	72 WIDCAN(5) 1.951
73 XANBOE(5) 1.963	74 XEXRUN(7) 1.991	75 XEXSAU(6) 2.003	76 (8) 1.990
77 XEXSUP(5) 1.963	78 1.975	79 2.014	80 XINMIR(6) 1.983
81 YERBON(5) 1.927	82 FUDDOY(3) 1.998	83 2.008	84 FUDDUE(3) 1.947
85 OFIXAC(4) 1.933	86 1.951	87 1.931	88 1.937
89 1.941	90 1.935	91 1.933	92 1.928
93 OFIXIK(4) 1.936	94 1.945	95 1.942	96 1.934
97 1.948	98 OFIXOQ(4) 1.939	99 1.943	100 1.941
01 1.942	02 1.937	03 1.950	04 OFIXUW(4) 1.940
05 1.935	06 1.939	07 OFIYAD(4) 1.959	08 1.955
09 OFIYEH(4) 1.922	10 1.927	11 1.930	12 1.924
13 OFIYIL(4) 1.922	14 1.931	15 1.911	16 1.920
17 OFIYOR(4) 1.917	18 1.921	19 1.926	20 1.926
21 OFIYUX(4) 1.936	22 1.926	23 1.938	24 1.929
25 OFIZAE(4) 1.931	26 1.940	27 1.925	28 1.929
29 OFIZEI(4) 1.937	30 1.947	31 1.935	32 1.925
33 OFIZIM(4) 1.941	34 1.944	35 1.929	36 1.952
37 OFIZOS(4) 1.948	38 1.929	39 1.957	40 1.939
41 OFIZUY(4) 1.960	42 1.926	43 1.933	

$$R_0 = 1.956(26) \text{ \AA}$$

Sn(IV) - O

1 FESJES(6) 1.909	2 1.908	3 FICDIE(6) 1.901	4 GAJFUS(6) 1.912
5 GANYOJ(6) 1.912	6 HOKVIM(6)1.907	7 IQIPED(6) 1.894	8 IQIPIH(6) 1.909
9 JEMLUI(6) 1.903	10 1.918	11 JIRJEA(6) 1.905	12 KIHGIN(6) 1.899
13 KOBXEF(6) 1.907	14 1.911	15 KOBXIJ(6) 1.905	16 1.908
17 KSNOXT(7) 1.907	18LODTUU(6)1.916	19 1.900	20 1.903
21 1.893	22 1.899	23 1.911	24MULPUE(8)1.913
25 NEMYAF(6) 1.888	26NIRYIX(6)1.901	27NTBZSN10(6)1.909	28OFACSO(6) 1.902
29 PACSNA(7) 1.893	30 1.915	31 PUMVAB(8)1.913	32QAZDEA(6) 1.891
33 1.892	34QAZDIE(6)1.888	35QIRPAI(6) 1.904	36RAWWOC(6) 1.892
37 RIZREX(6) 1.869	38ROPYEA(7)1.917	39 SIHNEC(5) 1.927	40 TIPMUA(6) 1.922
41 TRSNOH(7) 1.906	42UGOZUL(8)1.924	43 VEDKAR(7) 1.914	44 VERDUS(6) 1.914
45 VISKOX(6) 1.891	46 01(6) 1.895	47 VOLMIS(6) 1.909	48 XEXSID(6) 1.907
49 XOXSJ(6) 1.907	50 1.904	51XIFDIZ(6) 1.901	52YAHKAT(6)1.903
53 1.907	54 1.906	55 YUKCUC(6) 1.897	56 1.890
57 YUNDAM(6)1.877	58ZEBNEZ(6) 1.885	59ACETSN01(8)1.958	60 1.956

61 VISKIR(4) 1.948

$R_o = 1.906(15) \text{ \AA}$

II Sn(II) – S

1 COQREG(3) 2.380 2 DITCSN(4) 2.416 3 01(4) 2.411 4 GOFRIC(4) 2.399
5 IWUMOC(4) 2.421 6 (4) 2.435 7 (5) 2.434 8KAVMID(4) 2.442
9 2.444 10 OMDTSN(6)2.426 11 SENFUN(6) 2.425 12ZUZSUI(3) 2.442

$R_o = 2.423(19) \text{ \AA}$

Sn(IV) - S

1 BIPBOS(6) 2.396 2 CACHAQ(4) 2.382 3 COQREG(5) 2.387 4 (5) 2.391
5 EXANSN(6) 2.401 6 EYEJAT(4) 2.396 7 FADYOZ(6) 2.386 8 FADYUF(6)2.389
9 FADZAM(6) 2.390 10 FADZEQ(6) 2.378 11FEFHUU(6) 2.390 12 FEFJAC(6) 2.402
13 GIRHEU(5) 2.396 14 (5) 2.398 15 2.401 16 ICOKAN(4)2.389
17 ISIQOQ(6) 2.401 18 ISIQUW(6) 2.408 19KABMOQ01(4)2.399 20KEFBUS(6) 2.381
21 MDTCSN(6)2.404 22 METMAZ(4) 2.401 23 NUZNEB01(4) 2.390 24 02(4) 2.397
25 OGOVOV(4)2.395 26 PESQAF(5) 2.375 27 (5) 2.379 28 (5) 2.383
29 PUMTIA(4) 2.385 30 PUMTOG(6) 2.417 31QUFDWA(4) 2.390 32DETCASN01(6)2.384
33 YUCVEY(6)2.341 34ZZZUSW01(4) 2.397 35 YOHJOU01(5)2.386 36 2.400
37 2.383 38 YOCREN(4) 2.382 39 (5)2.396 40 2.399
41 2.393 42 XUHGUC(4) 2.394 43WOCCUM(6) 2.400 44WEBYEH(8)2.421
45 VULTIF(4) 2.390 46VOJSOD(6) 2.416 47VOJSIX(5) 2.376 48 VOJSET(5) 2.388
49 VAXJAG(4) 2.394 50 2.392 51VAMHOH(6)2.386 52SATTOX(4) 2.396
53 2.400 54 RAPJEY(4) 2.406 55 2.400 56RADBOO(4)2.392
57 QUFDEA(4) 2.389 58 FEYZOZ(4) 2.397 59 YUVTUE(6) 2.393 60ZARRAL(6) 2.428

$R_o = 2.393(12) \text{ \AA}$

III Sn(II) – N

1 ABENIE(6) 2.021 2 2.039 3 AFEKIF(4) 2.065 4 2.065
5 2.048 6 2.070 7 AFEKOL(5) 2.036 8 2.045
9 2.035 10 (6) 2.036 11 (5) 2.039 12 (6) 2.030
13 (4) 2.057 14 (5) 2.021 15 (2) 2.091 16CEXLIA(3) 2.038
17 EDUFUE(3) 2.023 18 EDUGAL(3) 2.021 19EDUGEP(3)2.011 20GIMVIH(6) 2.069
21 GOPVIU(3) 2.049 22 2.048 23 2.051 24 2.049
25 HIJLIW(3) 2.041 26HUGKOJ(4) 2.045 27HUGKUP(4) 2.042 28 JUSLIS(4) 2.083
29 KIVXES(8) 2.061 30 KOCSUR(2) 2.066 31LEWFUO(2) 2.063 32LEWGAV(2)2.069
33 LOGTIK(3) 2.039 34 LOGTUW(4)2.045 35QAKKET(3) 2.052 36 2.037
37 QAVLOO(3)2.029 38 QAVSUB(2)2.094 39QIVPEQ(4) 2.028 40RIHGUK(2) 2.066

41	2.067	42 RIXKAL(3)	2.040	43 ROQXIE(3)	2.052	44	2.061
45	2.066	46 ROQXOK(3)	2.044	47	2.020	48	(2) 2.080
49	(3) 2.031	50	2.064	51	(2) 2.071	52	(3) 2.035
53	2.052	54	2.075	55 SAHKOC(2)	2.059	56	2.057
57 SNPHCY(4)	2.001	58TACJIR(3)	2.048	59 TEBGEN(3)	2.043	60	2.047
61 TEBGIR(3)	2.059	62	2.061	63	2.057	64	2.063
65 TEBGOX(3)	2.068	66	2.068	67 TEBHAK(3)	2.028	68	2.032
69 TEBHIS(3)	2.059	70TUBKAC(4)	2.000	71TUHPUH(4)	2.019	72 UFUHUY(3)	2.068
73 UHOGUT(3)	2.075	74	2.063	75	2.068	76	2.057
77 VEHCUH(4)	2.040	78VEQLUZ(3)	2.011	79VEQMEK(3)	2.015	80VEYWIF(4)	2.023
81 VURFUJ(4)	2.026	82WISVAV(4)	2.065	83	2.058	84	2.064
85 WISVEZ(4)	2.059	86	2.048	87	2.048	88WUCZID(3)	2.021
89 XAVGIK(5)	2.054	90 XEJRUZ(3)	2.077	91 XIDDAP(3)	2.065	92XIXQEA(4)	2.001
93 XIXQIE(4)	2.001	94 XOWSAE(3)	2.043	95	2.036	96XOWSEI(3)	2.042
97 YEFROR(3)	2.034	98 YIMZUQ(4)	2.044	99	2.036	100YINBIH(3)	2.016
101YOMVEC(3)	2.050	102 ZAQHEE(3)	2.050	103	(4) 2.050	104ZAQHII(4)	2.022
105	2.034	106	2.032	107	2.039	108ZETBOP(2)	2.059
109 ZETBUV(3)	2.040						

Ro = 2.046(20) Å

Sn(IV) - N

1 CARGAD(6)	2.000	2 DEYEO(4)	1.974	3 HATMEV(6)	2.000	4 HICYIB(4)	2.050
5 JENSUR(5)	2.024	6 MAFDAZ(6)	1.948	7 SNPYCY01(8)	2.063	8 WISVAV(6)	2.008
9 WISVEZ(6)	2.021	10 YUMYIP(4)	2.047	11 WICREF(8)	2.062	12 SUDYIZ(3)	2.092

Ro = 2.024(41) Å

IV Sn(II) – P

1 DEJTER(4)	2.436	2 DUMGOH(3)	2.535	3 EZUWUR(3)	2.502	4	2.476
5	2.505	6 GELQUK(3)	2.477	7	2.478	8 GELRAK(3)	2.470
9	2.453	10 GELROF(3)	2.460	11	2.463	12	2.458
13	2.461	14	2.461	15	2.458	16 HIPBOX(3)	2.503
17	2.501	18	2.499	19	2.502	20 HIPBUD(3)	2.485
21	2.491	22	2.491	23 JASFEP(3)	2.491	24	2.493
25	2.494	26	2.494	27 JASFIT(3)	2.521	28	2.523
29 PAKWII(3)	2.492	30	2.484	31	2.492	32 QIFYOT(3)	2.482
33	2.486	34 RAHLAO(3)	2.483	35	2.488	36	2.487
37	2.488	38 RIRZEX(3)	2.485	39	2.487	40	2.495
41	2.493	42	2.495	43	2.486	44 SEWHIM(3)	2.460
45 SEWHOS(3)	2.462	46	2.464	47 TEBJIT(3)	2.474	48 TERJEF(3)	2.495
49	2.497	50 YOYMOO(3)	2.498	51	2.510	52YOYMUU(3)	2.495
53	2.500	54	2.488	55	2.502	56YUWBAT(3)	2.516
57 ZUWDUQ(3)	2.506	58	2.506				

$$R_o = 2.488(19) \text{ \AA}$$

V Sn(II) – C

1 SAKRIF(3) 2.035 2 2.050 3 VUXLUW(3) 2.086 4 2.091
 5 VUXMAD(3) 2.080 6 VUXMEH(3) 2.079 7 2.011 8 GUHNAY(3) 2.084

$$R_o = 2.077(24) \text{ \AA}$$

Sn(IV) – C

1 ATADOO(4) 2.143 2 BENNIS(4) 2.168 3 BIDPEK(4) 2.169 4 BOVGAV(4) 2.148
 5 BOZTAL(4) 2.175 6 BOZVIV(4) 2.191 7 BUQJAZ(4) 2.148 8 2.146
 9 BUQJED(4) 2.150 10 BUQJIH(4) 2.157 11 CEWGEG(4) 2.185 12 EKESAO(4) 2.135
 13 FUWYIF(4) 2.123 14HEVFIX01(4) 2.148 15 2.146 16 JOMKEB(4) 2.135
 17 JOMKIF(4) 2.158 18 JOMKOL(4) 2.146 19 JOMKUR(4) 2.174 20 KIMNEZ(4) 2.110
 21 KIFREX(4) 2.172 22 LESRUW(4) 2.144 23 MAZCAS(4) 2.165 24 MEXXIW(4) 2.181
 25 MIWSOA(4) 2.127 26 MIWSUG(4) 2.137 27 MUBVOU(4) 2.157 28 OCUCIZ(4) 2.156
 29 OJEWUV(4) 2.134 30 QEHQUQ(4) 2.165 31 RAPFUJ(4) 2.158 32 RAPGAQ(4) 2.156
 33 RELKEZ(4) 2.162 34 RERHIG(4) 2.177 35 SANQON(4) 2.131 36 2.136
 37 SANSEF(4) 2.143 38 SANTEG(4) 2.142 39 SOXMAU(4) 2.195 40 TFUPSN(4) 2.125
 41 TIKNIL(4) 2.140 42 2.114 43 TPHESN03(4) 2.143 44 TPIMSN(4) 2.133
 45 TPSNB(4) 2.177 46 TULREX(4) 2.150 47 UCAGIO(4) 2.147 48 2.139
 49 UJUXUS(4) 2.141 50 2.111 51 UJUJAZ(4) 2.163 52 2.164
 53 VEYDOS(4) 2.144 54 VICMEZ(4) 2.142 55 VICMID(4) 2.139 56 WOGQEP(4) 2.121
 57 XESPOS(4) 2.165 58 2.171 59 XIBPED(4) 2.129 60 XULMIB(4) 2.138
 61 YAQXAQ(4) 2.155 62 YAQXEU(4) 2.175 63 2.165 64 YAQXIY(4) 2.150
 65 YEGNUT(4) 2.149 66 YEGPAB(4) 2.154 67 YEGPIJ(4) 2.167 68 YEGPEF(4) 2.163
 69 YELDUO(4) 2.140 70 YOHZEB(4) 2.178 71 ZAGHIY(4) 2.182 72ZAGHOE(4) 2.147
 73 ZAJBER(4) 2.124 74 ZILFEF(4) 2.139 75 ZZZIHE01(4) 2.130

$$R_o = 2.151(19) \text{ \AA}$$

VI Sn(II) – Se

1 PULKAJ(5) 2.555 2 (5) 2.560 3 RAKLIZ(4) 2.393 4 ZOPGEG(4) 2.395
 5 2.400

$$R_o = 2.476 \text{ \AA}$$

Sn(IV) – Se

1	BECTAU(4) 2.527	2	BOTNII(5) 2.533	3	2.521	4	2.532
5	GIJJUF(4) 2.515	6	GIJKAM(4) 2.517	7	HAKMAH(4) 2.517	8	(5) 2.534
9	(5) 2.526	10	(4) 2.516	11	(4) 2.544	12	(5) 2.539
13	HAKMEL(4) 2.521	14	2.526	15	2.550	16	(5) 2.533
17	HAKMIP(6) 2.559	18	HAVGEQ(5) 2.526	19	(4) 2.509	20	JEYZAO(6) 2.559
21	KEBNOV(4) 2.505	22	2.515	23	KERBIT(4) 2.518	24	LALLUF(6) 2.511
25	LEWKON(4) 2.536	26	LEYLEH(5) 2.540	27	(4) 2.547	28	2.514
29	LEYLIL(4) 2.517	30	METLEC(4) 2.538	31	NEQREH(4) 2.523	32	NOMHON(6) 2.552
33	NOMHUT(4) 2.526	34	2.525	35	OGOVEL(4) 2.524	36	2.523
37	PORBUU(4) 2.530	38	2.524	39	SUTBOY(4) 2.523	40	SUTHUK(4) 2.520
41	SUTJUM(4) 2.511	42	2.500	43	SUYUYUG(4) 2.514	44	2.515
45	2.516	46	2.513	47	TAVDOJ(4) 2.525	48	2.519
49	TAVDUP(4) 2.516	50	YASTIV(4) 2.514	51	YASTIV01 2.521	52	YASTOB(5) 2.517
53	2.521	54	2.510	55	YOHJUA(5) 2.510	56	2.516
57	2.524	58	2.513	59	2.544	60	2.528
61	ZIQYUT(4) 2.512	62	2.513	63	2.507	64	2.519

$R_o = 2.524(13) \text{ \AA}$

VII Sn(II) – Te

1	LEFKAI(3) 2.738	2	LEFKAI01(3) 2.738	3	PULKEN(4) 2.744	4	PULKEN(4) 2.757
5	2.757						

$R_o = 2.747(10)$

Sn(IV) – Te

1	CIXJUO(4) 2.743	2	HARQUM(4) 2.735	3	2.730	4	LINWIP(4) 2.744
5	2.739	6	METLIG(4) 2.746	7	NEHVAY(4) 2.748	8	NEHVEC 2.736
9	2.746	10	NEHVIG(4) 2.754	11	2.743	12	NIMQOP(4) 2.727
13	NINJIE(4) 2.739	14	NUDSUA(4) 2.763	15	OGOVIP(4) 2.746	16	2.747
17	PAVKUM(4) 2.742	18	2.741	19	PUFHAZ(4) 2.731	20	QOGXUF01(4) 2.738
21	2.748	22	REGHAM(4) 2.731	23	SAVQUC(4) 2.752	24	SICDIS(4) 2.739
25	SICDUE(4) 2.759	26	SUYYOA(4) 2.725	27	2.720	28	2.724
29	2.717	30	TAVFAX(4) 2.736	31	VAHQQUQ(4) 2.727	32	2.749

$R_o = 2.740(11)$

VIII Sn(II) – As

1	EZUXEC(3) 2.598	2	2.557	3	2.592	4	EZUXIG(3) 2.606
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5 2.602 6 XERVOF(3) 2.565 7 2.570 8 YUVZUK(3) 2.592
 9 2.587

$R_o = 2.585(17)$

IX Sn(II) - X (X = F, Cl, Br, I)

X = F

1 FIDHIJ(4) 1.842 2 RIGGEU(4) 1.873 3 (7) 1.890 4 TOBBES(4) 1.870

$R_o = 1.869(20) \text{ \AA}$

X = Cl

1 ENCOSN(4) 2.334 2 GIQLIB(5) 2.331 3 GIQLOH(5) 2.328 4 KESHIZ(7) 2.239
 5 KISNIK(4) 2.348 6 NOYMAP(3) 2.292 7 PUDXOB02(6) 2.329 8 VIZJET(5) 2.352
 9 XIJBAU(6) 2.351 10 01(7) 2.296 11 BITXUX(6) 2.309 12 EFAREI(7) 2.348
 13 FASTAV(6) 2.342 14 GEHYUI(6) 2.360 15 HIFKOW(7) 2.339 16 KESHOF(5) 2.347
 17 LAQVUU(4) 2.327 18 TEHBUE(4) 2.450 19 VECVIJ(4) 2.355 20 (6) 2.323
 21 (4) 2.335 22 XUDHAF(4) 2.333 23 GIYGOK(6) 2.345 24 PPECOT20(3) 2.295
 25 DOWKIJ(3) 2.303 26 PECOTB20(3) 2.280 27 BIWLUP(3) 2.316

$R_o = 2.330(36) \text{ \AA}$

X = Br

1 BITYAE(6) 2.467 2 IGECAY(6) 2.534 3 WEKWAK(6) 2.504 4 ZOWTIO(6) 2.496
 5 ZOWTEK(6) 2.496 6 ZZZBWV01(6) 2.500

$R_o = 2.500(19) \text{ \AA}$

X = I

1 AQIMOC(6) 2.762 2 BAKHAX(6) 2.744 3 BAKHEB(6) 2.751 4 BAKNIF(6) 2.752
 5 BEDYEP(6) 2.734 6 (6) 2.733 7 BIVLUO(6) 2.736 8 BIVLUO(6) 2.751
 9 BIVMID(6) 2.751 10 DONDUF(6) 2.737 11 2.724 12 2.745
 13 FEPCUZ(5) 2.749 14 2.739 15 FITSUX(6) 2.743 16 2.747
 17 2.764 18 2.744 19 2.750 20 2.749
 21 2.765 22 2.745 23 IGEBUR(7) 2.765 24 LUNKEK(6) 2.747
 25 LUXJET(6) 2.743 26 POXNEV(6) 2.758 27 QUACKUU(6) 2.791 28 QUCLAB(6) 2.779
 29 2.792 30 QUCLEF(6) 2.756 31 2.760 32 QUCLIJ(6) 2.752
 33 QUCLOP(6) 2.765 34 2.763 35 QUCLUV(6) 2.754 36 QUFCAV(6) 2.740
 37 RUYDOE(6) 2.758 38 RUYDUK(6) 2.741

$R_o = 2.752(14) \text{ \AA}$

Sn(IV)-X (X= F, Cl, Br, I)

X = F

1 FICWAQ(6) 1.802 2 JOZXIF(6) 1.804 3 QAMDAK(6) 1.804 4 TOBBIW(6) 1.800

$$R_o = 1.802(2) \text{ \AA}$$

X = Cl

1 AMCLSN10(6)2.272 2 BAGNAY10(6)2.283 3 BAGNEC10(6) 2.285 4 BAWSEX(6) 2.280
5 BEXQUQ(6) 2.271 6 BIZCIX(6) 2.281 7 CADNEA(6) 2.274 8 CADNOK(6)2.278
9 CADNUQ(6) 2.292 10CADPAY(6) 2.266 11CAKFUP01(6)2.270 12CAKWIU(6)2.277
13CELREQ(6) 2.288 14 CIXJEY(6) 2.280 15COMPZS10(6)2.290 16CORLUR(6)2.277
17DICWAN(6) 2.279 18DIWJIC(6) 2.278 19DOCJIP(6) 2.272 20 2.267
21DOCJOV(6) 2.295 22 DOCJUB(6) 2.271 23DOCKAI(6) 2.282 24DPCKEM(6)2.260
25DOCKIQ(6) 2.278 26 2.273 27DUTYEW01(6)2.276 28 HIFJIP(6) 2.266
29NEVSIR(6) 2.276 30 YEYVUB(6) 2.277

$$R_o = 2.277(8) \text{ \AA}$$

X = Br

1 AJIGOQ(6) 2.448 2 BOVHIE(6) 2.418 3 BOVHIE01(6) 2.414 4 BUJPUR(6) 2.456
5 BZTBSN10(6)2.446 6 DAJGUQ(6) 2.448 7 DAWWON(6) 2.456 8 NAMLET(6) 2.414
9 QUHCUR(6) 2.456 10 WIHSOW 2.437 11 ZIYPAY(6) 2.469 12ZIYPAY01(6) 2.471

$$R_o = 2.444(20) \text{ \AA}$$

X = I

1 OHIBUD(5) 2.694 2 2.693 3 2.698 4 OHICEO(6) 2.708
5 FEPCUZ(6) 2.705

$$R_o = 2.700(7) \text{ \AA}$$