Appendix E
Data

Table E.1 Lennard-Jones parameters ε and σ for several molecules from simulations.[a)]

Compound	(ε/k) (K)	σ (10^{-12} m)	Compound	(ε/k) (K)	σ (10^{-12} m)
Ar	111.84	362.3	CH_4	140.42	401.5
Kr	154.87	389.5	CD_4	138.16	402.3
Xe	213.96	426.0	C_2H_6	216.12	478.2
O_2	113.27	365.4	nC_3H_8	255.18	547.1
N_2	91.85	391.9	nC_4H_{10}	287.20	608.1
F_2	104.29	357.1	nC_5H_{12}	309.75	670.9
Cl_2	296.27	448.5	nC_6H_{14}	327.47	731.9
CF_4	155.31	491.1	nC_7H_{16}	340.97	790.2
CCl_4	378.86	624.1	cC_3H_6	277.46	509.2
SiH_4	193.65	453.9	cC_5H_{10}	346.11	610.0
SiF_4	140.14	669.2	C_6H_6	377.46	617.4
$SiCl_4$	338.01	668.2	C_2H_2	209.11	463.5
$TiCl_4$	417.49	672.5	C_2H_4	200.78	458.9
SF_6	206.85	578.3	CO_2	201.71	444.4
UF_6	323.61	637.9	CS_2	388.81	498.3

a) Data from Ref. [1], obtained from fitting MD simulation results of the pressure at low density and the Soave equation of state.

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Table E.2 Lennard-Jones parameters ε and σ for several molecules from experimental data.[a)]

Compound	(ε/k) (K)	σ (10^{-12} m)	Compound	(ε/k) (K)	σ (10^{-12} m)
Ne	35.60	274.9	CH_4	148.2 (137*)	381.7 (382.2*)
Ar	119.8	340.5	C_2H_6	230*	441.8*
Kr	171	360	nC_3H_8	254*	506.1*
Xe	221	410	nC_4H_{10}	410*	499.7*
O_2	117.5	358	nC_5H_{12}	345*	576.9*
N_2	95.05	369.8	nC_6H_{14}	413*	590.9*
F_2	112*	365.3	CH_3OH	507*	358.5*
Cl_2	357*	411.5*	C_2H_5OH	391*	445.5*
Br_2	520*	426.8*	C_6H_6	440*	527*
I_2	550*	498.2*	C_2H_2	185*	422.1*
CH_3Cl	855	337.5	C_2H_4	205*	423.2*
CH_2Cl_2	406	475.9	CO_2	189	448.6
$CHCl_3$	327	543.0	CS_2	488*	443.8*
CCl_4	327*	588.1*	SiF_4	149	559
CF_4	152.5	470	SF_6	200.9	551

a) Data from Ref. [2], obtained from the viscosity (*) or from the second virial coefficient.

Table E.3 Thermodynamic vapor pressure constants *a*, *b*, and *c* for several compounds.[a)]

Molecule	*a*	*b*	*c*	L_0 (cal ·mol^{-1})
Ar	14.059	2.814	498	2278
CS_2	15.9206	2.90	1844	8444
H_2O	20.9586 (17.443)	4.0843 (3.868)	2825.3 (2795)	12926 (13611)
H_2S	11.778	1.510	1145	5248
NH_3	17.718	3.406	1612.5	7377
CH_4	14.9640	3.283	598.4	2739
CH_3Cl	22.0114	5.133	1701	7786
CH_2Cl_2	20.2795	4.2857	2098.1	9601
$CHCl_3$	12.2999	3.9158	2179.1	9974
CCl_4	24.3085	5.669	2452.6	11220
C_2H_6	16.1506	3.332	1055	4831
nC_3H_8	15.772	3.003	1325	6066
nC_4H_{10}	19.877	4.376	1729	7912
nC_5H_{12}	22.752	5.253	2099	9611
nC_6H_{14}	25.281	6.013	2465	11284
nC_8H_{18}	30.040	7.396	3162	14473
CH_3OH	22.43	4.634	2661	12180
nC_4H_9OH	40.21	10.35	4100	18750
$nC_5H_{11}OH$	46.49	12.42	4580	20940
$nC_6H_{13}OH$	51.00	13.80	5068	23170
$nC_7H_{15}OH$	56.20	15.41	5580	25510
$nC_8H_{17}OH$	65.21	18.40	6190	28300
C_6H_6	20.818 (26.075)	4.7793 (6.203)	2388 (2610)	10927 (11940)
$(CH_3)_3N$	30.094	7.978	2142	10030
C_6H_5COOH	30.172	6.720	4714	21567
$(CH_3)_3CO$	19.557	3.966	2203	10078

$\log P_{sat}$ (mmHg) $= a - b\log T - c/T$), where T [K] and $L_0 = 2.303Rc$ with R the gas constant.
a) Data from Ref. [3].

Table E.4 Trouton constant C for several molecules.[a)]

Molecule	C	Molecule	C	Molecule	C
Ar	9.0	CH_4	8.8	H_2S	10.6
Kr	9.1	C_2H_6	9.6	SO_2	11.4
Xe	9.2	n-C_4H_{10}	9.9	CH_3Cl	10.4
Rn	9.4	i-C_4H_{10}	9.8	$CHCl_3$	10.6
N_2	8.7	n-C_7H_{16}	10.3	$(CH_3)_2O$	10.4
O_2	9.1	c-C_6H_{12}	10.2	NH_3	11.7
Cl_2	10.3	C_6H_6	10.5	H_2O	13.1
CO	8.9	HCl	10.3	CH_3OH	12.6
N_2O	10.8	HBr	10.3	C_2H_5OH	13.2

a) Data from Ref. [4].

Table E.5 Vogel constants A, B, and C for the viscosity η of some polar liquids.[a)]

	$-A$ (Pa s)	B (°C)	$-C$ (°C)	% error	T-range (°C)
Ammonia	1.7520	218.76	50.701	0.76	–66/+40
Methylamine	1.3634	126.389	102.886	0.32	–70/–10
Water	1.5668	230.298	146.797	0.51	–10/+160
Methanol	1.6807	354.876	48.585	2.05	–98/+50
Ethanol	2.4401	774.414	–15.249	2.66	–98/+70
n-Propanol	2.4907	725.903	37.474	1.10	0/+70
n-Butanol	3.0037	1033.306	–4.3828	0.80	–51/+100
Glycerine	2.8834	997.586	128.481	4.50	–42/+30
Ethylene glycol	1.5923	438.064	141.617	0.18	+20/+100

$\ln\eta = A + B/(t/°C + C)$, where t is temperature in °C.
a) Data from Ref. [5].

Table E.6 Dipole moment μ and polarizability volume $\alpha' = \alpha/4\pi\varepsilon_0$ for some compounds.[a)]

Compound	μ (D)	α' (10^{-30} m^{-3})	Compound	μ (D)	α' (10^{-30} m^{-3})
He	0	0.201	$(CH_3)_2CO$	2.84	6.33
Ar	0	1.63	CH_3OCH_3	1.29	5.16
C_6H_6	0	10.3	CH_3OH	1.71	3.23
$C_6H_5CH_3$	0.36	–	C_2H_5OH	1.69	–
C_6H_5Cl	1.70	12.25	HF	1.91	0.80
CH_4	0	2.60	HCl	1.03	2.63
CH_3Cl	1.86	4.56	HBr	0.79	3.61
CH_2Cl_2	1.58	6.48	HI	0.38	5.45
$CHCl_3$	1.02	8.23	N_2	0	1.76
CCl_4	0	10.5	O_2	0	1.60
H_2O	1.84	1.49	Cl_2	0	4.61
NH_3	1.47	2.26	CO	0.10	1.95
$N(CH_3)_3$	0.60	8.29	CO_2	0	2.65

a) Dipole moment data from Ref. [6].

Table E.7 Compressibility κ and expansivity α for some solvents at 20 °C.[a)]

Solvent	ρ (g cm^{-3})	κ_S (10^{11} Pa^{-1})	α_P (10^3 K^{-1})	Solvent	ρ (g cm^{-3})	κ_S (10^{11} Pa^{-1})	α_P (10^3 K^{-1})
n-Hexane	0.654	130	1.36	Water	0.997	45.5	0.257
n-Heptane	0.684	108	–	Methanol	0.792	100	–
n-Octane	0.703	99.3	1.15	Ethanol	0.798	91.1	1.12
Carbon tetrachloride	1.595	71.4	1.22	*n*-Butyl alcohol	0.810	76.9	–
Benzene	0.878	64.9	1.23	Acetone	0.792	89	–
Toluene	0.866	65.5	1.06	Diethyl ether	0.714	138	1.43
Formamide	1.1292	–	59.1				

a) Data for ρ and κ_S from Ref. [7] (ultrasonic methods determine κ_S, but κ_S can be converted to κ_T using Eq. (2.24)). Data for α_P from Ref. [8].

Table E.8 Critical data for several organic compounds.[a)]

Name	Molar mass	ω	T_{cri} (K)	P_{cri} (bar)	V_{cri} ($cm^3\,mol^{-1}$)	n_D	T_n (K)
Acetone	58.080	0.307	508.2	47.01	209.	1.3590	329.4
MEK	72.11	0.329	535.6	41.5	267.	1.3788	267
Dimethylether	46.07	0.192	400.0	53.7	178	–	249
Diethylether	74.123	0.281	466.7	36.40	280.	1.353	307.6
Carbon tetrafluoride	88.00	0.191	227.6	37.4	140.	1.0005	145
Carbon tetrachloride	153.822	0.193	556.4	45.60	276.	1.4601	349.8
Chloroform	119.377	0.222	536.4	54.72	239.	1.4459	334.3
Water	18.015	0.345	647.1	220.55	55.9	1.3330	373.2
Methanol	32.042	0.564	512.6	80.97	118.	1.33	337.9
Ethanol	46.069	0.645	513.9	61.48	167.	1.36	351.4
1-Propanol	60.096	0.622	536.8	51.75	219.	1.387	370.4
i-Propanol	60.096	–	508.3	47.6	220	1.3776	356
1-Butanol	74.123	0.594	563.1	44.23	275.	1.399	390.8
Benzene	78.114	0.210	562.2	48.98	259.	–	353.2
Toluene	92.141	0.262	591.8	41.06	316.	1.399	383.8
Ethylbenzene	106.167	0.303	617.2	36.06	374.	–	409.4
Aniline	93.13	0.384	699	53.1	274.	–	457
Pyridine	79.1	0.24	620.0	56.3	254.	1.5093	254
o-Xylene	106.167	0.310	630.3	37.34	369.	1.50545	417.6
m-Xylene	106.167	0.326	617.1	35.36	376.	1.49722	412.3
p-Xylene	106.167	0.322	616.2	35.11	379.	1.49582	411.5
Phenol	94.113	0.444	694.3	61.30	229.	–	455.0
Methane	16.04	0.011	190.6	45.19	98.7	–	111.6
Ethane	30.07	0.100	305.4	48.83	148.	–	184.6
Propane	44.1	0.153	369.85	42.48	200.0	–	231.1
Cyclopropane	42.08	0.264	397.8	54.9	210	–	240
Butane	58.123	0.200	425.1	37.96	255.	–	272.7
Cyclobutane	56.107	0.209	459.9	49.8	210	–	286
Pentane	72.150	0.252	469.7	33.70	313.	1.358	309.2
Cyclopentane	70.134	0.196	511.8	45.02	258.	–	322.4
Neopentane	72.15	0.197	433.8	31.96	311.1	–	282.6
Hexane	86.177	0.301	507.6	30.25	371.	1.375	341.9
Cyclohexane	84.161	0.210	553.6	40.73	308.	1.4262	353.9
Heptane	100.204	0.350	540.2	27.40	428.	1.387	371.6
Octane	114.231	0.400	568.7	24.90	486.	1.398	398.8
Nonane	128.258	0.444	594.6	22.90	544.	1.405	424.0
Acetaldehyde	44.05	0.303	461	56	154	–	293
Acetonitrile	41.05	0.309	508.1	47.0	209	1.344	354
Chlorobenzene	112.56	0.249	632.4	45.2	308	–	404
Trimethylamine	59.11	0.195	433.2	40.7	254	–	270

a) Data from Refs [9] and [10].
MEK, methylethyl ketone.

Table E.9 Physical data for some solvents at 20 °C.[a)]

Solvent	ε	μ (D)	R_M (cm^3)	γ (mN m^{-2})	ρ (g cm^{-3})	t_n (°C)
Acetic acid	6.19	1.74	13	26.9	1.0497	117.9
Acetic anhydride	21	2.8	22.4	31.9	1.075	140
Acetone	20.7	2.88	16.2	22.9	0.792	56.3
Acetonitrile	3.44	3.44	0	28.45	0.7768	81.6
Aniline	6.8	1.55	–	42.8	1.022	184.4
Benzene	2.28	0	26.2	28.2	0.878	80.1
Benzyl alcohol	13.1	1.71	32.5	39	1.042	205.2
Bromobenzene	5.4	1.7	34	35.7	1.495	156
Bromoform	4.3	1.3	0	31.7	2.8776	149.6
Butanol	17.5	1.66	0	24.3	1.0269	117.7
i-Butanol	17.7	1.64	22.4	22.5	0.798	107.7
t-Butanol	10.9	1.66	22.2	20	0.7812	82.4
Carbon disulfide	2.6	0	–	31.5	1.2566	46.26
Carbon tetrachloride	2.23	0	26.7	26.2	1.5842	76.8
Chlorobenzene	5.62	1.69	31.1	32.7	1.11	131
Chloroform	4.81	1.04	21.5	26.5	1.4799	61.2
Cyclohexane	2.02	0	27.8	24.4	0.7739	80.7
Dichloromethane	8.93	1.60	16.3	27.3	1.3168	39.8
Diethyl ether	4.34	1.15	22.5	16.5	0.7078	34.6
N,N-Dimethylacetamide	37.8	3.81	24.4	33.3	0.937	165
N,N-Dimethylformamide	36.7	3.86	20	35.2	0.9445	153
Dimethyl sulfoxide	49	3.96	20.1	42.8	1.0958	189
1,4-Dioxane	2.21	0	21.7	32.9	1.0269	101.3
Ethanol	24.3	1.69	14.9	21.8	0.798	78.3
Ethyl acetate	6.02	1.78	22.1	23.2	0.8945	77.1
Ethylene glycol	37.7	2.28	14.5	48.1	1.1097	197.3
Formamide	110	3.7	10.7	58.5	1.1292	210.5
Formic acid	58	1.41	8.6	37.1	1.2131	100.7
Glycerol	42.5	2.56	20.5	62.5	1.2582	290
n-Heptane	1.92	0	34.6	19.8	0.684	98.5
n-Hexane	1.89	0.08	29.9	17.9	0.654	68.7
Methanol	32.6	1.7	8.2	22.4	0.792	64.7
Methyl acetate	6.7	1.72	17.5	24.1	0.932	56.9
n-Methylpyrrolidone	33	4.1	–	–	0.703	202
Nitrobenzene	35	4.22	32.9	42.8	1.1987	210.8
Nitromethane	38.6	3.46	12.5	50.7	1.1312	101.2
n-Pentane	1.84	0	25.3	15.5	0.626	36.2
Propanol	20.1	1.68	17.5	23.4	0.804	97.5
i-Propanol	18.3	1.66	17.6	20.8	0.781	82.3
Pyridine	12.3	2.19	24.1	36.3	0.982	115.3
Tetrahydrofuran	7.32	1.63	19.9	26.9	0.8844	66
Toluene	2.38	0.36	31.1	27.9	0.866	110.6
Water	78.5	1.84	3.7	71.8	0.997	100

a) Data for ε, μ, R_m and γ from Ref. [11].
t_n represents the normal boiling point.

Table E.10 Van der Waals constants a and b for several compounds.[a)]

Compound	a (atm l^2 mol^{-2})	b (10^{-2} l mol^{-1})	Compound	a (atm l^2 mol^{-2})	b (10^{-2} l mol^{-1})
He	0.03457	2.370	C_6H_{14}	24.71	17.35
Ne	0.2135	1.709	H_2O	5.536	3.049
Ar	1.363	3.219	H_2S	4.490	4.287
Kr	2.349	3.978	CH_3OH	9.649	6.702
Xe	4.250	5.105	C_2H_5OH	12.18	8.407
C_6H_6	18.24	11.54	CH_3Cl	7.570	6.483
$C_6H_5CH_3$	24.38	14.63	CCl_4	19.75	12.81
C_6H_5F	20.19	12.86	$SiCl_4$	4.377	5.786
C_6H_5Cl	25.77	14.53	$(CH_3)_2C{=}O$	14.09	9.94
C_6H_5Br	28.94	15.39	CO	1.505	3.985
C_6H_5I	33.52	16.56	CO_2	3.640	4.267
CH_4	2.283	4.278	H_2	0.2476	2.661
C_2H_6	5.562	6.380	O_2	1.378	3.183
C_3H_8	8.779	8.445	N_2	1.408	3.913
C_4H_{10}	14.66	12.26	Cl_2	6.579	5.622
C_5H_{12}	19.26	14.6	NH_3	4.225	3.707

a) Data from Ref. [12].

Table E.11 Critical data for several inorganic compounds.[a)]

Name	Molar mass	ω	T_{cri} (K)	P_{cri} (bar)	V_{cri} (cm^3 mol^{-1})	Z_{cri}	T_n (K)
Ne	20.180	–0.016	44.44	27.605	41.70	0.312	27.1
Ar	39.948	–0.002	150.9	48.98	74.57	0.291	87.3
Kr	83.800	–0.002	209.4	55.00	91.20	0.288	119.7
Xe	131.29	0.002	289.7	58.40	118.0	0.286	165.0
N_2	28.014	0.037	126.2	33.98	91.10	0.289	77.4
O_2	31.999	0.022	154.6	50.43	73.4	0.288	90.2
F_2	37.997	0.051	144.3	52.2	66.2	0.288	85.0
Cl_2	70.905	0.069	417.2	77.00	124.	0.275	239.1
Br_2	159.81	0.119	584.1	103.0	135	0.269	331.9
I_2	253.81	0.229	819	117.0	155.	0.266	457.6
CO	28.01	0.045	132.9	34.94	93.10	0.292	81.7
CO_2	40.01	0.225	304.1	73.74	94.07	0.247	–
CS_2	76.14	0.115	552	79.0	170	0.293	319
HF	20.01	0.329	461.0	65.0	69.0	0.117	292.7
HCl	36.46	0.133	324.7	83.1	81.0	0.249	188.2
HBr	80.91	0.069	363.2	85.1	–	–	206.4
HI	127.91	0.038	423.9	90.00	132.7	0.303	237.6
NH_3	17.031	0.255	405.4	113.53	72.47	0.255	239.8
H_2S	34.08	0.090	373.4	89.63	98.00	0.283	212.8

a) Data mainly from Ref. [13].

Table E.12 Antoine constants *A*, *B*, and *C* for the vapor pressure P_{sat} of several compounds.[a)]

Name	Formula	*A*	*B*	*C*	Range (°C)	$\Delta_{vap}H_n$ (kJ mol^{-1})	t_n (°C)
Acetone	C_3H_6O	14.3145	2756.22	228.060	−27 to 77	29.10	56.2
MEK	C_4H_8O	14.1343	2838.4	218.690	−8 to 103	31.30	79.6
Butyl ether	$C_4H_{10}O$	14.0735	2511.29	231.200	−43 to 55	26.52	34.4
Carbon tetrachloride	CCl_4	14.0572	2914.23	232.148	−14 to 101	29.82	76.6
Chloroform	$CHCl_3$	13.7324	2548.74	218.552	−23 to 84	29.94	61.1
Dichloromethane	CH_2Cl_2	13.9891	2463.912	223.240	−38 to 60	28.06	39.7
Water	H_2O	16.3872	3885.70	230.170	0 to 200	40.66	100.0
Methanol	CH_4O	16.5785	3638.27	239.500	−11 to 83	35.21	64.7
Ethanol	C_2H_6O	16.8958	3795.17	230.918	3 to 96	38.56	78.2
1-Propanol	C_3H_8O	16.1154	3483.67	205.807	20 to 116	41.44	97.2
2-Propanol	C_3H_8O	16.6796	3640.20	219.610	8 to 100	39.85	82.2
1-Butanol	$C_4H_{10}O$	15.3144	3212.43	182.739	37 to 138	43.29	117.6
2-Butanol	$C_4H_{10}O$	15.1989	3026.03	186.500	25 to 120	40.75	99.5
Iso-butanol	$C_4H_{10}O$	14.6047	2740.95	166.670	30 to 128	41.82	107.8
Tert-butanol	$C_4H_{10}O$	14.8445	2658.29	177.650	10 to 101	39.07	82.3
Benzene	C_6H_6	13.7819	2726.81	217.572	6 to 104	30.73	80.0
Toluene	C_7H_8	13.9320	3056.96	217.625	13 to 136	33.18	110.6
Ethylbenzene	C_8H_{10}	13.9726	3259.93	212.300	33 to 163	35.57	136.2
Phenol	C_6H_6O	14.4387	3507.80	175.400	20 to 208	46.18	181.8
o-Xylene	C_8H_{10}	14.0415	3358.79	212.041	40 to 172	36.24	144.4
m-Xylene	C_8H_{10}	14.1387	3381.81	216.120	35 to 166	35.66	139.1
p-Xylene	C_8H_{10}	14.0579	3331.45	214.627	35 to 166	35.67	138.3
Phenol	C_6H_6O	14.4387	3507.80	175.400	80 to 208	46.18	181.8
Butane	C_4H_{10}	13.6608	2154.70	238.789	−73 to 19	22.44	−0.5
Iso-butane	C_4H_{10}	13.8254	2181.79	248.870	−83 to 7	21.30	−11.9
Pentane	C_5H_{12}	13.7667	2451.88	232.014	−45 to 58	25.79	36
Cyclo-pentane	C_5H_{10}	13.9727	2653.90	234.510	−35 to 71	27.30	49.2
Hexane	C_6H_{14}	13.8193	2696.04	224.317	−19 to 92	28.85	68.7
Cyclo-hexane	C_6H_{12}	13.6568	2723.44	220.618	9 to 105	29.97	80.7
Heptane	C_7H_{16}	13.8622	2910.26	216.432	4 to 123	31.77	98.4
Octane	C_8H_{18}	13.9346	3123.13	209.635	26 to 152	43.41	125.6
Iso-octane	C_8H_{18}	13.6703	2896.31	220.767	2 to 125	30.79	99.2
Nonane	C_9H_{20}	13.9854	3311.19	202.694	46 to 178	36.91	150.8
Decane	$C_{10}H_{22}$	13.9748	3442.76	193.858	65 to 203	38.75	174.1
Acetonitrile	C_2H_3H	14.8950	3413.10	250.253	−27 to 81	30.19	81.6
Acetic acid	$C_2H_4O_2$	15.0717	3580.80	224.650	24 to 142	23.70	117.9

$\ln P_{sat}/\text{kPa} = A - B/(t/°\text{C} +)$, where t is the temperature in °C.
$\Delta_{vap}H_n$ is the enthalpy of evaporation, and t_n the normal boiling temperature.
a) Data from Ref. [9].
MEK, methylethyl ketone.

Table E.13 Solubility products K_{SP} of various salts.[a)]

Compound	K_{SP} at 286 K	Compound	K_{SP} at 286 K	Compound	K_{SP} at 286 K
BaF_2	1.7×10^{-6}	$BaSO_4$	1×10^{-10}	ZnS[b)]	1×10^{-23}
CaF_2	3.4×10^{-11}	$SrSO_4$	2.8×10^{-7}	CdS	8×10^{-27}
MgF_2	6.5×10^{-9}	$CaSO_4$	2×10^{-4}	HgS	2×10^{-52}
PbF_2	3.6×10^{-8}	$PbSO_4$	2×10^{-8}	CuS	8.5×10^{-36}
AgCl	1×10^{-10}	$AlOH_3$	2×10^{-33}	NiS	2×10^{-21}
CuCl	1.0×10^{-6}	$MgOH_2$	1.2×10^{-11}	CoS	8×10^{-22}
$HgCl_2$	2.0×10^{-18}	$FeOH_3$	1.1×10^{-36}	FeS	3.7×10^{-18}
$PbCl_2$	1.7×10^{-5}	$FeOH_2$	1.6×10^{-14}	MnS	2.5×10^{-10}
AgI	1.5×10^{-16}	$MnOH_2$	4×10^{-14}	Ag_2S	1.6×10^{-49}
CuI	5×10^{-12}	$NiOH_2$	4×10^{-14}	$BaCO_3$	5×10^{-9}
HgI_2	1.2×10^{-28}	$CuOH_2$	1×10^{-19}	$CaCO_3$	1×10^{-8}
PbI_2	1.4×10^{-8}	$ZnOH_2$	1.8×10^{-14}	$MgCO_3$	2.6×10^{-5}
$BaCrO_4$	2.4×10^{-10}	AgOH	1×10^{-8}	$PbCO_3$	3.3×10^{-14}
$PbCrO_4$	1.8×10^{-14}				
Ag_2CrO_4	1.2×10^{-12}				

a) Data from Ref. [14].
b) Sulfides often crystallize in more than one form, with different solubility products. Values used may differ by as much as 10^9.

Table E.14 Ionic radii according to Pauling r_P and Shannon-Prewitt r_{SP} for IV and VI coordination.[a)]

Ion	r_P (pm)	$^{IV}r_{SP}$ (pm)	$^{VI}r_{SP}$ (pm)	Ion	r_P (pm)	$^{IV}r_{SP}$ (pm)	$^{VI}r_{SP}$ (pm)
Li^+	60	73	90 (88)	B^{3+}	20	25 (26)	41
Na^+	95	113	116	Al^{3+}	50	53	67.5 (67.0)
K^+	133	151	152	Sc^{3+}	81	–	88.5 (87.0)
Rb^+	148	–	166 (163)	Ga^{3+}	62	61	76
Cs^+	169	–	181 (184)	Y^{3+}	93	–	104 (103.2)
Be^{2+}	31	41	59 (45)	In^{3+}	81	76	94 (3)
Mg^{2+}	65	71 (63)	86.0	Fe^{3+}		63 HS	69 LS
Ca^{2+}	99	–	114			–	78.5 HS
Zn^{2+}	74	74	88.0 (88.5)	F^-	136	117	119
Sr^{2+}	113	–	132 (130)	Cl^-	181	–	167
Ba^{2+}	135	–	149 (150)	Br^-	195	–	182
Fe^{2+}		77 HS	75 LS	I^-	216	–	206
		–	92 HS (91)	O^{2-}	140	124	126
Mn^{2+}		80 HS	81 LS	S^{2-}	184	–	170
			97 HS (96)	Se^{2-}	198	–	184
Ni^{2+}		69	84 (83)	Te^{2-}	221	–	207

a) Data from Refs [15] and [16].
For VI coordination, no brackets indicate the same values reported in 1969 as in 1976; otherwise data in brackets refer to the 1969 report.
LS, low-spin; HS, high-spin.

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