

Das Periodensystem der Elemente

Alkalimetalle Erdalkalimetalle Lanthanoide Actinoide Übergangsmetalle Metalle Halbmetalle Nichtmetalle Edelgase Unbekannt Gruppe 17 = Halogene

Literatur:
[MW] Commission on Isotopic Abundancies and Atomic Weights, <http://www.ciaaw.org/>
[r_a] E. Clementi, D.L. Raimondi, W.P. Reinhardt, *J. Chem. Phys.*, 1967, 47, 1300-1307.
[r_i] R. D. Shannon, *Acta Cryst.*, 1976, A32, 751-767 and https://en.wikipedia.org/wiki/ionic_radius.
[m.s., b.p., phases, cryst. struct., ox. no.] <https://www.wikipedia.org>
[EN] A. L. Allred, *J. Inorg. Nucl. Chem.*, 1961, 17, 215-221.
[Konstanten] <http://physics.nist.gov/cuu/Constants/index.html>

1-IA 1 H Wasserstoff 1.00794 52.9/154 13.99/20.271 g, H ₂ , H hex 1s ²	2-IIA 3 Li Lithium 6.941 167/90 453.65/1603 s, Li _n , Li ⁺ bcc 1s ² 2s ¹	4 Be Beryllium 9.0121831(5) 112/59 1560/2742 s, Be _n , Be ²⁺ hcp 1s ² 2s ²	5-VA 11 Na Natrium 22.98976928(2) 190/116 370.94/1156.09 s, Na _n , Na ⁺ bcc [Ne]3s ¹	6-VIA 12 Mg Magnesium 24.305 145/86 923/1363 s, Mg _n , Mg ²⁺ hcp [Ne]3s ²	7-VIIA 19 K Kalium 39.0983(1) 243/152 336.7/1032 s, K _n , K ⁺ bcc [Ar]4s ¹	8-VIIIA 20 Ca Calcium 40.078(4) 194/114 1115/1757 s, Ca _n , Ca ²⁺ fcc [Ar]4s ²	9-VIIIA 21 Sc Scandium 44.955908(5) 184/88.5 1814/3109 s, Sc _n , Sc ³⁺ hcp [Ar]3d ¹ 4s ²	10-VIIIA 22 Ti Titan 47.867(1) 176/74.5 1941/3560 s, Ti _n , Ti ⁴⁺ hcp [Ar]3d ² 4s ²	11-IB 23 V Vanadium 50.9415(1) 171/68 2183/3680 s, V _n , V ⁵⁺ bcc [Ar]3d ³ 4s ²	12-IB 24 Cr Chrom 51.9961(6) 166/58 2180/2944 s, Cr _n , Cr ⁶⁺ bcc [Ar]3d ⁵ 4s ¹	13-IIIB 25 Mn Mangan 54.938044(3) 161/60 1519/2334 s, Mn _n , Mn ⁷⁺ bcc [Ar]3d ⁵ 4s ²	14-IVB 26 Fe Eisen 55.845(2) 156/39 1811/3134 s, Fe _n , Fe ²⁺ bcc, fcc [Ar]3d ⁶ 4s ²	15-VB 27 Co Cobalt 58.933194(4) 152/68.5 1768/3200 s, Co _n , Co ³⁺ hcp [Ar]3d ⁷ 4s ²	16-VIB 28 Ni Nickel 58.6934(4) 149/83 1728/3003 s, Ni _n , Ni ²⁺ fcc [Ar]3d ⁸ 4s ²	17-VIIB 29 Cu Kupfer 63.546(3) 145/87 1357.77/2835 s, Cu _n , Cu ²⁺ fcc [Ar]3d ¹⁰ 4s ¹	18-VIIB 30 Zn Zink 65.38(2) 142/88 692.68/1180 s, Zn _n , Zn ²⁺ hcp [Ar]3d ¹⁰ 4s ²	13-IIIB 31 Ga Gallium 69.723(1) 136/76 302.91/2673 s, Ga _n , Ga ³⁺ ort [Ar]3d ¹⁰ 4s ² 4p ¹	14-IVB 32 Ge Germanium 72.630(8) 125/67 1211.40/3106 s, Ge _n , Ge ⁴⁺ fcc [Ar]3d ¹⁰ 4s ² 4p ²	15-VB 33 As Arsen 74.921595(6) 114/72 887 (subl.) s, As _n , As ³⁺ rho [Ar]3d ¹⁰ 4s ² 4p ³	16-VIB 34 Se Selen 78.971(8) 103/184 494/958 s, Se _n , Se ²⁻ hex [Ar]3d ¹⁰ 4s ² 4p ⁴	17-VIIB 35 Br Brom 79.904 94/182 265.8/332.0 l, Br ₂ , Br ⁻ ort [Ar]3d ¹⁰ 4s ² 4p ⁵	18-VIIB 36 Kr Krypton 83.798(2) 88/- 115.78/119.93 g, Kr fcc [Ar]3d ¹⁰ 4s ² 4p ⁶
55 Cs Caesium 132.90545196 298/181 301.7/944 s, Cs _n , Cs ⁺ bcc [Xe]6s ¹	56 Ba Barium 137.327(7) 253/149 1000/2118 s, Ba _n , Ba ²⁺ bcc [Xe]6s ²	57-71 Lanthanoide	72 Hf Hafnium 178.49(2) 208/85 2506/4876 s, Hf _n , Hf ⁴⁺ hcp [Xe]4f ¹⁴ 5d ² 6s ²	73 Ta Tantal 180.94788(2) 200/78 3290/5731 s, Ta _n , Ta ⁵⁺ bcc, tet [Xe]4f ¹⁴ 5d ³ 6s ²	74 W Wolfram 183.84(1) 193/74 3695/5869 s, W _n , W ⁶⁺ bcc [Xe]4f ¹⁴ 5d ⁴ 6s ²	75 Re Rhenium 186.207(1) 188/67 3459/5869 s, Re _n , Re ⁷⁺ hcp [Xe]4f ¹⁴ 5d ⁵ 6s ²	76 Os Osmium 190.23(3) 185/53 3306/5285 s, Os _n , Os ⁸⁺ hcp [Xe]4f ¹⁴ 5d ⁶ 6s ²	77 Ir Iridium 192.227(3) 180/82 2719/4403 s, Ir _n , Ir ³⁺ fcc [Xe]4f ¹⁴ 5d ⁷ 6s ²	78 Pt Platin 195.084(9) 177/94 2041.4/4098 s, Pt _n , Pt ²⁺ fcc [Xe]4f ¹⁴ 5d ⁹ 6s ¹	79 Au Gold 196.966569(5) 174/99 1337.33/3243 s, Au _n , Au ³⁺ fcc [Xe]4f ¹⁴ 5d ¹⁰ 6s ¹	80 Hg Quecksilber 200.592(3) 171/116 234.3210/629.88 l, Hg _n , Hg ²⁺ rho [Xe]4f ¹⁴ 5d ¹⁰ 6s ²	81 Tl Thallium 204.38 156/102.5 577/1746 s, Tl _n , Tl ³⁺ hcp [Xe]4f ¹⁴ 5d ¹⁰ 6s ² 6p ¹	82 Pb Blei 207.2(1) 154/133 600.61/2022 s, Pb _n , Pb ²⁺ fcc [Xe]4f ¹⁴ 5d ¹⁰ 6s ² 6p ²	83 Bi Bismut 208.98040(1) 143/90 544.7/1837 s, Bi _n , Bi ³⁺ rho [Xe]4f ¹⁴ 5d ¹⁰ 6s ² 6p ³	84 Po Polonium (209) 135/108 527/1235 s, Po _n , Po ⁴⁺ cub [Xe]4f ¹⁴ 5d ¹⁰ 6s ² 6p ⁴	85 At Astat (210) 127/n.a. 575/610 n.a., n.a., n.a. fcc [Xe]4f ¹⁴ 5d ¹⁰ 6s ² 6p ⁵	86 Rn Radon (222) 120 202/211.5 g, Rn fcc [Xe]4f ¹⁴ 5d ¹⁰ 6s ² 6p ⁶					
87 Fr Francium (223) n.a./n.a. n.a./n.a. n.a., n.a., n.a. bcc [Rn]7s ¹	88 Ra Radium (226) n.a./162 973/2010 s, Ra _n , Ra ²⁺ bcc [Rn]7s ²	89-103 Actinoide	104 Rf Rutherfordium (267) n.a./n.a. 2400/5800 s, n.a., n.a. hcp [Rn]5f ¹⁴ 6d ² 7s ²	105 Db Dubnium (268) n.a./n.a. n.a./n.a. s, n.a., n.a. bcc [Rn]5f ¹⁴ 6d ³ 7s ²	106 Sg Seaborgium (269) n.a./n.a. n.a./n.a. s, n.a., n.a. bcc [Rn]5f ¹⁴ 6d ⁴ 7s ²	107 Bh Bohrium (270) n.a./n.a. n.a./n.a. s, n.a., n.a. hcp [Rn]5f ¹⁴ 6d ⁵ 7s ²	108 Hs Hassium (269) n.a./n.a. n.a./n.a. s, n.a., n.a. hcp [Rn]5f ¹⁴ 6d ⁶ 7s ²	109 Mt Meitnerium (278) n.a./n.a. n.a./n.a. s, n.a., n.a. fcc [Rn]5f ¹⁴ 6d ⁷ 7s ²	110 Ds Darmstadtium (281) n.a./n.a. n.a./n.a. s, n.a., n.a. bcc [Rn]5f ¹⁴ 6d ⁸ 7s ²	111 Rg Roentgenium (282) n.a./n.a. 1814/3109 s, n.a., n.a. bcc [Rn]5f ¹⁴ 6d ⁹ 7s ²	112 Cn Copernicium (285) n.a./n.a. n.a./n.a. s, n.a., n.a., n.a. hcp [Rn]5f ¹⁴ 6d ¹⁰ 7s ²	113 Nh Nihonium (286) n.a./n.a. 700/1430 s, n.a., n.a. hcp [Rn]5f ¹⁴ 6d ¹⁰ 7s ²	114 Fl Flerovium (289) n.a./n.a. 340/420 s, n.a., n.a. n.a. [Rn]5f ¹⁴ 6d ¹⁰ 7s ²	115 Mc Moscovium (289) n.a./n.a. 670/1400 s, n.a., n.a. n.a. [Rn]5f ¹⁴ 6d ¹⁰ 7s ²	116 Lv Livermorium (293) n.a./n.a. n.a./n.a. s, n.a., n.a. n.a. [Rn]5f ¹⁴ 6d ¹⁰ 7s ²	117 Ts Tennessin (294) n.a./n.a. n.a./n.a. s, n.a., n.a. n.a. [Rn]5f ¹⁴ 6d ¹⁰ 7s ²	118 Og Oganesson (294) n.a./n.a. n.a./n.a. s, n.a., n.a. n.a. [Rn]5f ¹⁴ 6d ¹⁰ 7s ²					

57 La Lanthan 138.90547(7) n.a./117.2 1193/3737 s, La _n , La ³⁺ dhcp [Xe]5d ¹ 6s ²	58 Ce Cer 140.116(1) n.a./101 1068/3716 s, Ce _n , Ce ⁴⁺ dhcp [Xe]4f ¹ 5d ¹ 6s ²	59 Pr Praseodym 140.90766(2) n.a./113 1208/3403 s, Pr _n , Pr ³⁺ dhcp [Xe]4f ³ 6s ²	60 Nd Neodym 144.242(3) n.a./112.3 1297/3347 s, Nd _n , Nd ³⁺ dhcp [Xe]4f ⁴ 6s ²	61 Pm Promethium (145) n.a./111 1315/3273 s, Pm _n , Pm ³⁺ dhcp [Xe]4f ⁵ 6s ²	62 Sm Samarium 150.36(2) n.a./109.8 1345/2173 s, Sm _n , Sm ³⁺ rho [Xe]4f ⁶ 6s ²	63 Eu Europium 151.964(1) n.a./108.7 1099/1802 s, Eu _n , Eu ³⁺ bcc [Xe]4f ⁷ 6s ²	64 Gd Gadolinium 157.25(3) n.a./107.8 1585/3273 s, Gd _n , Gd ³⁺ hcp [Xe]4f ⁷ 5d ¹ 6s ²	65 Tb Terbium 158.92535(2) n.a./106.3 1629/3396 s, Tb _n , Tb ³⁺ hcp [Xe]4f ⁹ 6s ²	66 Dy Dysprosium 162.500(1) n.a./105.2 1680/2840 s, Dy _n , Dy ³⁺ hcp [Xe]4f ¹⁰ 6s ²	67 Ho Holmium 164.93033(2) n.a./104.1 1734/2873 s, Ho _n , Ho ³⁺ hcp [Xe]4f ¹¹ 6s ²	68 Er Erbium 167.259(3) n.a./103 1802/3141 s, Er _n , Er ³⁺ hcp [Xe]4f ¹² 6s ²	69 Tm Thulium 168.93422(2) n.a./102 1818/2223 s, Tm _n , Tm ³⁺ hcp [Xe]4f ¹³ 6s ²	70 Yb Ytterbium 173.045(10) n.a./100.8 1097/1469 s, Yb _n , Yb ³⁺ fcc [Xe]4f ¹⁴ 6s ²	71 Lu Lutetium 174.9668(1) n.a./100.1 1925/3675 s, Lu _n , Lu ³⁺ hcp [Xe]4f ¹⁴ 5d ¹ 6s ²
89 Ac Actinium (227) n.a./126 n.a./n.a. s, Ac _n , Ac ³⁺ fcc [Rn]6d ¹ 7s ²	90 Th Thorium 232.0377(4) n.a./108 2023/5061 s, Th _n , Th ⁴⁺ fcc [Rn]6d ² 7s ²	91 Pa Protactinium 231.03588(2) n.a./104 1841/4300 s, Pa _n , Pa ⁴⁺ tet [Rn]5f ² 6d ¹ 7s ²	92 U Uran 238.02891(3) n.a./103 1405.3/4404 s, U _n , U ⁴⁺ ort [Rn]5f ³ 6d ¹ 7s ²	93 Np Neptunium (237) n.a./89 912/4447 s, Np _n , Np ⁵⁺ ort [Rn]5f ⁴ 6d ¹ 7s ²	94 Pu Plutonium (244) n.a./100 912.5/3505 s, Pu _n , Pu ⁴⁺ mon [Rn]5f ⁶ 7s ²	95 Am Americium (243) n.a./111.5 1449/2700 s, Am _n , Am ³⁺ dhcp [Rn]5f ⁷ 7s ²	96 Cm Curium (247) n.a./99 1613/3383 s, Cm _n , Cm ⁴⁺ dhcp [Rn]5f ⁸ 6d ¹ 7s ²	97 Bk Berkelium (247) n.a./110 1259/2900 s, Bk _n , Bk ³⁺ dhcp [Rn]5f ⁹ 7s ²	98 Cf Californium (251) n.a./109 1173/2700 s, Cf _n , Cf ³⁺ dhcp [Rn]5f ¹⁰ 7s ²	99 Es Einsteinium (252) n.a./92.8 1133/1209 s, Es _n , Es ²⁺ fcc [Rn]5f ¹¹ 7s ²	100 Fm Fermium (257) n.a./n.a. 1800/n.a. s, n.a., n.a. n.a. [Rn]5f ¹² 7s ²	101 Md Mendelevium (258) n.a./n.a. 1100/n.a. s, n.a., n.a. n.a. [Rn]5f ¹³ 7s ²	102 No Nobelium (259) n.a./n.a. 1100/n.a. s, n.a., n.a. n.a. [Rn]5f ¹⁴ 7s ²	103 Lr Lawrencium (266) n.a./n.a. 1900/n.a. s, n.a., n.a. n.a. [Rn]5f ¹⁴ 7s ² 7p ¹

