

# Periodensystem der Elemente

Hauptgruppen

Hauptgruppen

|   |   |  |  |  |   |  |   |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |   |  |   |  |   |  |
|---|---|--|--|--|---|--|---|--|--|--|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|---|--|---|--|---|--|---|--|
|   | I (1)   |  |  |  |   |  |   |  |  |  |   |  |  |  |  |  | VIII (18)  |  |  |  |  |  |  |  |  |  |  |  |   |  |   |  |   |  |   |  |
| 1 | 1 <b>H</b><br>Wasserstoff<br>1,00794<br>13,60 2,1 |  |  |  |   |  |   |  |  |  |   | 2 <b>He</b><br>Helium<br>4,002602<br>24,58 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |   |  |   |  |   |  |
| 2 | 3 <b>Li</b><br>Lithium<br>6,941<br>5,39 1,0       |  | 4 <b>Be</b><br>Beryllium<br>9,012182<br>9,32 1,5 |  |   |  |   |  |  |  |   |  |  |  | 5 <b>B</b><br>Bor<br>10,811<br>8,30 2,0            |  | 6 <b>C</b><br>Kohlenstoff<br>12,0107<br>11,26 2,5  |  | 7 <b>N</b><br>Stickstoff<br>14,0067<br>14,53 3,0     |  | 8 <b>O</b><br>Sauerstoff<br>15,9994<br>13,62 3,5     |  | 9 <b>F</b><br>Fluor<br>18,9984032<br>17,42 4,0       |  | 10 <b>Ne</b><br>Neon<br>20,1797<br>21,56         |  |  |  |   |  |   |  |   |  |   |  |
| 3 | 11 <b>Na</b><br>Natrium<br>22,989770<br>5,14 0,9  |  | 12 <b>Mg</b><br>Magnesium<br>24,3050<br>7,65 1,2 |  | Nebengruppen                                      |  |   |  |  |  |   |  |  |  | 13 <b>Al</b><br>Aluminium<br>26,981538<br>5,98 1,5 |  | 14 <b>Si</b><br>Silicium<br>28,0855<br>8,15 1,8    |  | 15 <b>P</b><br>Phosphor<br>30,973761<br>10,48 2,1    |  | 16 <b>S</b><br>Schwefel<br>32,065<br>10,36 2,5       |  | 17 <b>Cl</b><br>Chlor<br>35,453<br>12,97 3,0         |  | 18 <b>Ar</b><br>Argon<br>39,948<br>15,76         |  |  |  |   |  |   |  |   |  |   |  |
|   | III A (3)   |  | IV A (4)   |  | V A (5)   |  | VI A (6)  |  | VII A (7)  |  | VIII A (8/9/10)                                     |  | I A (11)   |  | II A (12)  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |  |   |  |   |  |   |  |
| 4 | 19 <b>K</b><br>Kalium<br>39,0983<br>4,34 0,8      |  | 20 <b>Ca</b><br>Calcium<br>40,078<br>6,11 1,0    |  | 21 <b>Sc</b><br>Scandium<br>44,955910<br>6,54 1,3 |  | 22 <b>Ti</b><br>Titan<br>47,867<br>6,82 1,5           |  | 23 <b>V</b><br>Vanadium<br>50,9415<br>6,74 1,6   |  | 24 <b>Cr</b><br>Chrom<br>51,9961<br>6,77 1,6        |  | 25 <b>Mn</b><br>Mangan<br>54,938049<br>7,44 1,5    |  | 26 <b>Fe</b><br>Eisen<br>55,845<br>7,87 1,8        |  | 27 <b>Co</b><br>Cobalt<br>58,933200<br>7,86 1,8    |  | 28 <b>Ni</b><br>Nickel<br>58,6934<br>7,63 1,8        |  | 29 <b>Cu</b><br>Kupfer<br>63,546<br>7,73 1,9         |  | 30 <b>Zn</b><br>Zink<br>65,409<br>9,39 1,6           |  | 31 <b>Ga</b><br>Gallium<br>69,723<br>6,0 1,6     |  | 32 <b>Ge</b><br>Germanium<br>72,64<br>7,90 1,8 |  | 33 <b>As</b><br>Arsen<br>74,92160<br>9,81 2,0   |  | 34 <b>Se</b><br>Selen<br>78,96<br>9,75 2,4        |  | 35 <b>Br</b><br>Brom<br>79,904<br>11,81 2,8   |  | 36 <b>Kr</b><br>Krypton<br>83,798<br>14,0   |  |
| 5 | 37 <b>Rb</b><br>Rubidium<br>85,4678<br>4,18 0,8   |  | 38 <b>Sr</b><br>Strontium<br>87,62<br>5,69 1,0   |  | 39 <b>Y</b><br>Yttrium<br>88,90585<br>6,38 1,3    |  | 40 <b>Zr</b><br>Zirkonium<br>91,224<br>6,84 1,4       |  | 41 <b>Nb</b><br>Niob<br>92,90638<br>6,88 1,6     |  | 42 <b>Mo</b><br>Molybdän<br>95,94<br>7,10 1,8       |  | 43 <b>Tc</b><br>Technetium<br>97,9072*<br>7,28 1,9 |  | 44 <b>Ru</b><br>Ruthenium<br>101,07<br>7,37 2,2    |  | 45 <b>Rh</b><br>Rhodium<br>102,90550<br>7,46 2,2   |  | 46 <b>Pd</b><br>Palladium<br>106,42<br>8,34 2,2      |  | 47 <b>Ag</b><br>Silber<br>107,8682<br>7,57 1,9       |  | 48 <b>Cd</b><br>Cadmium<br>112,411<br>8,99 1,7       |  | 49 <b>In</b><br>Indium<br>114,818<br>5,78 1,7    |  | 50 <b>Sn</b><br>Zinn<br>118,710<br>7,34 1,8    |  | 51 <b>Sb</b><br>Antimon<br>121,760<br>8,64 1,9  |  | 52 <b>Te</b><br>Tellur<br>127,60<br>9,01 2,1      |  | 53 <b>I</b><br>Iod<br>126,90447<br>10,45 2,5  |  | 54 <b>Xe</b><br>Xenon<br>131,293<br>12,13   |  |
| 6 | 55 <b>Cs</b><br>Caesium<br>132,90545<br>3,89 0,7  |  | 56 <b>Ba</b><br>Barium<br>137,327<br>5,21 0,9    |  | 57–71<br>Lanthanoide                              |  | 72 <b>Hf</b><br>Hafnium<br>178,49<br>7,0 1,3          |  | 73 <b>Ta</b><br>Tantal<br>180,9479<br>7,89 1,5   |  | 74 <b>W</b><br>Wolfram<br>183,84<br>7,98 1,7        |  | 75 <b>Re</b><br>Rhenium<br>186,207<br>7,88 1,9     |  | 76 <b>Os</b><br>Osmium<br>190,23<br>8,7 2,2        |  | 77 <b>Ir</b><br>Iridium<br>192,217<br>9,1 2,2      |  | 78 <b>Pt</b><br>Platin<br>195,078<br>9,0 2,2         |  | 79 <b>Au</b><br>Gold<br>196,96655<br>9,22 2,4        |  | 80 <b>Hg</b><br>Quecksilber<br>200,59<br>10,4 1,9    |  | 81 <b>Tl</b><br>Thallium<br>204,3833<br>6,11 1,8 |  | 82 <b>Pb</b><br>Blei<br>207,2<br>7,41 1,8      |  | 83 <b>Bi</b><br>Bismut<br>208,98038<br>7,29 1,9 |  | 84 <b>Po</b><br>Polonium<br>208,9824*<br>8,42 2,0 |  | 85 <b>At</b><br>Astat<br>209,9862*<br>9,5 2,2 |  | 86 <b>Rn</b><br>Radon<br>222,0176*<br>10,75 |  |
| 7 | 87 <b>Fr</b><br>Francium<br>223,0197*<br>4,0 0,7  |  | 88 <b>Ra</b><br>Radium<br>226,0254*<br>5,28 0,9  |  | 89–103<br>Actinoide                               |  | 104 <b>Rf</b><br>Rutherfordium<br>267,122*<br>7,0 1,3 |  | 105 <b>Db</b><br>Dubnium<br>268,126*<br>7,89 1,5 |  | 106 <b>Sg</b><br>Seaborgium<br>271,134*<br>7,98 1,7 |  | 107 <b>Bh</b><br>Bohrium<br>270,133*<br>7,88 1,9   |  | 108 <b>Hs</b><br>Hassium<br>277,152*<br>8,7 2,2    |  | 109 <b>Mt</b><br>Meitnerium<br>278,156*<br>9,1 2,2 |  | 110 <b>Ds</b><br>Darmstadtium<br>281,165*<br>9,0 2,2 |  | 111 <b>Rg</b><br>Roentgenium<br>282,169*<br>9,22 2,4 |  | 112 <b>Cn</b><br>Copernicium<br>285,177*<br>10,4 1,9 |  | 113 <b>Nh</b><br>Nihonium<br>286*<br>6,11 1,8    |  | 114 <b>Fl</b><br>Flerovium<br>289*<br>7,41 1,8 |  | 115 <b>Mc</b><br>Moscovium<br>290*<br>7,29 1,9  |  | 116 <b>Lv</b><br>Livermorium<br>293*<br>8,42 2,0  |  | 117 <b>Ts</b><br>Tennessin<br>294*<br>9,5 2,2 |  | 118 <b>Og</b><br>Oganesson<br>294*<br>10,75 |  |

Atommasse in u (\*Atommasse des langlebigsten Isotops) — 12,0107 (\*)  
 Ordnungszahl — 6 **C** — Atomsymbol  
 Kohlenstoff — Elementname  
 Erste Ionisierungsenergie in eV — 11,26 2,5 — Elektronegativität nach PAULING

- Metalle
- Halbmetalle
- Nichtmetalle
- chemische Eigenschaften unbekannt

↑ Perioden

Lanthanoide

|                         |                     |                           |                        |                            |                          |                          |                            |                         |                            |                         |                        |                         |                           |                          |
|-------------------------|---------------------|---------------------------|------------------------|----------------------------|--------------------------|--------------------------|----------------------------|-------------------------|----------------------------|-------------------------|------------------------|-------------------------|---------------------------|--------------------------|
| 138,9055                | 140,116             | 140,90765                 | 144,24                 | 144,9127*                  | 150,36                   | 151,964                  | 157,25                     | 158,92534               | 162,50                     | 164,93032               | 167,259                | 168,93421               | 173,04                    | 174,967                  |
| 57 <b>La</b><br>Lanthan | 58 <b>Ce</b><br>Cer | 59 <b>Pr</b><br>Praseodym | 60 <b>Nd</b><br>Neodym | 61 <b>Pm</b><br>Promethium | 62 <b>Sm</b><br>Samarium | 63 <b>Eu</b><br>Europium | 64 <b>Gd</b><br>Gadolinium | 65 <b>Tb</b><br>Terbium | 66 <b>Dy</b><br>Dysprosium | 67 <b>Ho</b><br>Holmium | 68 <b>Er</b><br>Erbium | 69 <b>Tm</b><br>Thulium | 70 <b>Yb</b><br>Ytterbium | 71 <b>Lu</b><br>Lutetium |
| 5,58 1,1                | 5,47 1,1            | 5,42 1,1                  | 5,49 1,1               | 5,55 1,1                   | 5,64 1,2                 | 5,67 1,2                 | 6,14 1,2                   | 5,85 1,2                | 5,93 1,2                   | 6,02 1,2                | 6,10 1,2               | 6,18 1,2                | 6,254 1,1                 | 5,426 1,2                |

Actinoide

|                          |                         |                              |                     |                           |                           |                           |                        |                           |                             |                             |                          |                              |                           |                             |
|--------------------------|-------------------------|------------------------------|---------------------|---------------------------|---------------------------|---------------------------|------------------------|---------------------------|-----------------------------|-----------------------------|--------------------------|------------------------------|---------------------------|-----------------------------|
| 227,0278*                | 232,0381                | 231,03588                    | 238,02891           | 237,0482*                 | 244,0642*                 | 243,0614*                 | 247,0704*              | 247,0703*                 | 251,0796*                   | 252,0830*                   | 257,0951*                | 258,0984*                    | 259,1010*                 | 266,1198*                   |
| 89 <b>Ac</b><br>Actinium | 90 <b>Th</b><br>Thorium | 91 <b>Pa</b><br>Protactinium | 92 <b>U</b><br>Uran | 93 <b>Np</b><br>Neptunium | 94 <b>Pu</b><br>Plutonium | 95 <b>Am</b><br>Americium | 96 <b>Cm</b><br>Curium | 97 <b>Bk</b><br>Berkelium | 98 <b>Cf</b><br>Californium | 99 <b>Es</b><br>Einsteinium | 100 <b>Fm</b><br>Fermium | 101 <b>Md</b><br>Mendelevium | 102 <b>No</b><br>Nobelium | 103 <b>Lr</b><br>Lawrencium |
| 6,9 1,1                  | 6,95 1,3                | 5,89 1,5                     | 6,08 1,4            | 6,19 1,3                  | 6,06 1,3                  | 5,99 1,3                  | 6,02 1,3               | 6,23 1,3                  | 6,30 1,3                    | 6,42 1,3                    | 6,50 1,3                 | 6,58 1,3                     | 6,65 1,3                  | 4,96                        |