

I have compiled the properties of the elements of the periodic table in various formats like CSV, XLX, and String Arrays. I compiled these to create a Periodic Table app for the Android Devices. (Check out the app here.)



These can be used to populate a database or array/arrayLists.

I am sharing those here.

If you find those useful, don't forget to thank me in the comments section below. Hope you find them useful.

CSV: [chemicalProperties](#)

XLX: [Chemical Elements Properties](#)

Arrays:

```
public static String[]
elementSymbols={"H","He","Li","Be","B","C","N","O","F","Ne","Na","Mg","Al","Si","P","S",
,"Cl","Ar","K","Ca","Sc","Ti","V","Cr","Mn","Fe","Co","Ni","Cu","Zn","Ga","Ge","As","Se",
,"Br","Kr","Rb","Sr","Y","Zr","Nb","Mo","Tc","Ru","Rh","Pd","Ag","Cd","In","Sn","Sb","",
,"Te","I","Xe","Cs","Ba","La","Ce","Pr","Nd","Pm","Sm","Eu","Gd","Tb","Dy","Ho","Er","Tm",
,"Yb","Lu","Hf","Ta","W","Re","Os","Ir","Pt","Au","Hg","Tl","Pb","Bi","Po","At","Rn","F",
,"r","Ra","Ac","Th","Pa","U","Np","Pu","Am","Cm","Bk","Cf","Es","Fm","Md","No","Lr","Rf",
,"Db","Sg","Bh","Hs","Mt","Ds","Rg","Cn","Nh","Fl","Mc","Lv","Ts","Og"};
public static String[]
elementName={"Hydrogen","Helium","Lithium","Beryllium","Boron","Carbon","Nitrogen","Oxy",
"gen","Fluorine","Neon","Sodium","Magnesium","Aluminum","Silicon","Phosphorus","Sulfur",
,"Chlorine","Argon","Potassium","Calcium","Scandium","Titanium","Vanadium","Chromium","M",
"anganese","Iron","Cobalt","Nickel","Copper","Zinc","Gallium","Germanium","Arsenic","Sel",
"enium","Bromine","Krypton","Rubidium","Strontium","Yttrium","Zirconium","Niobium","Moly",
"bdenum","Technetium","Ruthenium","Rhodium","Palladium","Silver","Cadmium","Indium","Tin",
,"Antimony","Tellurium","Iodine","Xenon","Cesium","Barium","Lanthanum","Cerium","Prase",
"odymium","Neodymium","Promethium","Samarium","Europium","Gadolinium","Terbium","Dyspros",
"ium","Holmium","Erbium","Thulium","Ytterbium","Lutetium","Hafnium","Tantalum","Tungsten",
,"Rhenium","Osmium","Iridium","Platinum","Gold","Mercury","Thallium","Lead","Bismuth",
,"Polonium","Astatine","Radon","Francium","Radium","Actinium","Thorium","Protactinium","",
"Uranium","Neptunium","Plutonium","Americium","Curium","Berkelium","Californium","Einste",
"inium","Fermium","Mendelevium","Nobelium","Lawrencium","Rutherfordium","Dubnium","Seabo",
"rgium","Bohrium","Hassium","Meitnerium","Darmstadtium","Roentgenium","Copernicium","Nih",
"onium","Flerovium","Moscovium","Livermorium","Tennessee","Oganesson"};
public static String[]
massNumber={"1.00794(4)","4.002602(2)","6.941(2)","9.012182(3)","10.811(7)","12.0107(8)",
,"14.0067(2)","15.9994(3)","18.9984032(5)","20.1797(6)","22.98976928(2)","24.3050(6)",
,"26.9815386(8)","28.0855(3)","30.973762(2)","32.065(5)","35.453(2)","39.948(1)","39.098",
"3(1)","40.078(4)","44.955912(6)","47.867(1)","50.9415(1)","51.9961(6)","54.938045(5)","",
"55.845(2)","58.933195(5)","58.6934(4)","63.546(3)","65.38(2)","69.723(1)","72.64(1)","7",
"4.92160(2)","78.96(3)","79.904(1)","83.798(2)","85.4678(3)","87.62(1)","88.90585(2)","9",
"1.224(2)","92.90638(2)","95.96(2)","[98]","101.07(2)","102.90550(2)","106.42(1)","107.8",
"682(2)","112.411(8)","114.818(3)","118.710(7)","121.760(1)","127.60(3)","126.90447(3)",
```

```
"131.293(6)", "132.9054519(2)", "137.327(7)", "138.90547(7)", "140.116(1)", "140.90765(2)", "144.242(3)", "[145]", "150.36(2)", "151.964(1)", "157.25(3)", "158.92535(2)", "162.500(1)", "164.93032(2)", "167.259(3)", "168.93421(2)", "173.054(5)", "174.9668(1)", "178.49(2)", "180.94788(2)", "183.84(1)", "186.207(1)", "190.23(3)", "192.217(3)", "195.084(9)", "196.966569(4)", "200.59(2)", "204.3833(2)", "207.2(1)", "208.98040(1)", "[209]", "[210]", "[222]", "[223]", "[226]", "[227]", "232.03806(2)", "231.03588(2)", "238.02891(3)", "[237]", "[244]", "[243]", "[247]", "[247]", "[251]", "[252]", "[257]", "[258]", "[259]", "[262]", "[267]", "[268]", "[271]", "[272]", "[270]", "[276]", "[281]", "[280]", "[285]", "[284]", "[289]", "[288]", "[293]", "[294]", "[294]"};
```

[illegible]

```
public static String[] boilingPointC={"-252.87 °C","-268.93 °C","1342 °C","2470  
°C","4000 °C","4027 °C","-195.79 °C","-182.9 °C","-188.12 °C","-246.08 °C","883  
°C","1090 °C","2519 °C","2.9×103 °C","280.5 °C","444.72 °C","-34.04 °C","-185.8  
°C","759 °C","1484 °C","2830 °C","3287 °C","3407 °C","2671 °C","2061 °C","2861  
°C","2927 °C","2913 °C","2927 °C","907 °C","2204 °C","2820 °C","614 °C","685 °C","59  
°C","-153.22 °C","688 °C","1382 °C","3345 °C","4409 °C","4744 °C","4639 °C","4265  
°C","4150 °C","3695 °C","2963 °C","2162 °C","767 °C","2072 °C","2602 °C","1587 °C","988  
°C","184.3 °C","-108 °C","671 °C","1870 °C","3464 °C","3360 °C","3290  
°C","3.1×103 °C","3×103 °C","1803 °C","1527 °C","3250 °C","3230 °C","2567 °C","2700  
°C","2868 °C","1950 °C","1196 °C","3402 °C","4603 °C","5458 °C","5555 °C","5596  
°C","5012 °C","4428 °C","3825 °C","2856 °C","356.73 °C","1473 °C","1749 °C","1564  
°C","962 °C","N/A","-61.7 °C","N/A","1737 °C","3200 °C","4820 °C","4000 °C","3927  
°C","4×103 °C","3230 °C","2011 °C","3110  
°C","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A"  
,"N/A","N/A","N/A","N/A","N/A","N/A","N/A"};
```

```
public static String[] meltingPointK={"14.01 K","N/A","453.69 K","1560 K","2348 K","3823 K","63.05 K","54.8 K","53.5 K","24.56 K","370.87 K","923 K","933.47 K","1687 K","317.3 K","388.36 K","171.6 K","83.8 K","336.53 K","1115 K","1814 K","1941 K","2183 K","2180 K","1519 K","1811 K","1768 K","1728 K","1357.77 K","692.68 K","302.91 K","1211.4 K","1090 K","494 K","265.8 K","115.79 K","312.46 K","1050 K","1799 K","2128 K","2750 K","2896 K","2430 K","2607 K","2237 K","1828.05 K","1234.93 K","594.22 K","429.75 K","505.08 K","903.78 K","722.66 K","386.85 K","161.3 K","301.59 K","1000 K","1193 K","1071 K","1204 K","1294 K","1373 K","1345 K","1095 K","1586 K","1629 K","1685 K","1747 K","1770 K","1818 K","1092 K","1936 K","2506 K","3290 K","3695 K","3459 K","3306 K","2739 K","2041.4 K","1337.33 K","234.32 K","577 K","600.61 K","544.4 K","527 K","575 K","202 K","N/A","973 K","1323 K","2023 K","1845 K","1408 K","917 K","913 K","1449 K","1618 K","1323 K","1173 K","1133
```

```
K","1800 K","1100 K","1100 K","1900 K","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A",
"N/A","N/A","N/A","N/A","N/A","N/A","N/A"};
```

```
public static String[] boilingPointK={"20.28 K","4.22 K","1615 K","2743 K","4273
K","4300 K","77.36 K","90.2 K","85.03 K","27.07 K","1156 K","1363 K","2792 K","3173
K","553.6 K","717.87 K","239.11 K","87.3 K","1032 K","1757 K","3103 K","3560 K","3680
K","2944 K","2334 K","3134 K","3200 K","3186 K","3200 K","1180 K","2477 K","3093
K","887 K","958 K","332 K","119.93 K","961 K","1655 K","3618 K","4682 K","5017 K","4912
K","4538 K","4423 K","3968 K","3236 K","2435 K","1040 K","2345 K","2875 K","1860
K","1261 K","457.4 K","165.1 K","944 K","2143 K","3737 K","3633 K","3563 K","3373
K","3273 K","2076 K","1800 K","3523 K","3503 K","2840 K","2973 K","3141 K","2223
K","1469 K","3675 K","4876 K","5731 K","5828 K","5869 K","5285 K","4701 K","4098
K","3129 K","629.88 K","1746 K","2022 K","1837 K","1235 K","N/A","211.3 K","N/A","2010
K","3473 K","5093 K","4273 K","4200 K","4273 K","3503 K","2284 K","3383
K","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A",
"N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A"};
```

```
public static String[] meltingPointF={};
```

```
public static String[] boilingPointF={};
```

```
public static String[] density={"0.0899 g/l","0.1785 g/l","0.535 g/cm3","1.848
g/cm3","2.46 g/cm3","2.26 g/cm3","1.251 g/l","1.429 g/l","1.696 g/l","0.9 g/l","0.968
g/cm3","1.738 g/cm3","2.7 g/cm3","2.33 g/cm3","1.823 g/cm3","1.96 g/cm3","3.214
g/l","1.784 g/l","0.856 g/cm3","1.55 g/cm3","2.985 g/cm3","4.507 g/cm3","6.11
g/cm3","7.14 g/cm3","7.47 g/cm3","7.874 g/cm3","8.9 g/cm3","8.908 g/cm3","8.92
g/cm3","7.14 g/cm3","5.904 g/cm3","5.323 g/cm3","5.727 g/cm3","4.819 g/cm3","3.12
g/cm3","3.75 g/l","1.532 g/cm3","2.63 g/cm3","4.472 g/cm3","6.511 g/cm3","8.57
g/cm3","10.28 g/cm3","11.5 g/cm3","12.37 g/cm3","12.45 g/cm3","12.023 g/cm3","10.49
g/cm3","8.65 g/cm3","7.31 g/cm3","7.31 g/cm3","6.697 g/cm3","6.24 g/cm3","4.94
g/cm3","5.9 g/l","1.879 g/cm3","3.51 g/cm3","6.146 g/cm3","6.689 g/cm3","6.64
g/cm3","7.01 g/cm3","7.264 g/cm3","7.353 g/cm3","5.244 g/cm3","7.901 g/cm3","8.219
g/cm3","8.551 g/cm3","8.795 g/cm3","9.066 g/cm3","9.321 g/cm3","6.57 g/cm3","9.841
g/cm3","13.31 g/cm3","16.65 g/cm3","19.25 g/cm3","21.02 g/cm3","22.61 g/cm3","22.65
g/cm3","21.09 g/cm3","19.3 g/cm3","13.534 g/cm3","11.85 g/cm3","11.34 g/cm3","9.78
g/cm3","9.196 g/cm3","N/A","9.73 g/l","N/A","5 g/cm3","10.07 g/cm3","11.724
g/cm3","15.37 g/cm3","19.05 g/cm3","20.45 g/cm3","19.816 g/cm3","N/A","13.51
g/cm3","14.78 g/cm3","15.1
g/cm3","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N
/A","N/A","N/A","N/A","N/A","N/A","N/A"};
```

```
public static String[] discovery={"1766","1895","1817","1797","1808","prehistoric
","1772","1774","1886","1898","1807","1755","1825","1824","1669","prehistoric
","1774","1894","1807","1808","1879","1791","1801","1797","1774","prehistoric
","1735","1751","prehistoric ","prehistoric ","1875","1886","ca. 1250
","1817","1826","1898","1861","1790","1794","1789","1801","1778","1937","1844","1803","
1803","prehistoric ","1817","1863","prehistoric ","prehistoric
","1782","1811","1898","1860","1808","1839","1803","1895","1895","1945","1879","1901","
1880","1843","1886","1878","1842","1879","1878","1907","1923","1802","1783","1925","180
3","1803","1557","prehistoric ","prehistoric ","1861","prehistoric
","1540","1898","1940","1900","1939","1898","1899","1829","1917","1789","1940","1940","
1944","1944","1949","1950","1952","1952","1955","1958","1961","1964/69 ","1967/70
","1974","1976","1984","1982","1994","1994","1996","2003","1998","2003","2000","2010","
2002"};
```

```
public static String[] discoverer={"Cavendish","Ramsay and
Cleve","Arfvedson","Vauquelin","Davy and Gay-Lussac","unknown","Rutherford","Priestley
and Scheele","Moissan","Ramsay and
```

Travers","Davy","Black","Oersted","Berzelius","Brandt","unknown","Scheele","Ramsay and Rayleigh","Davy","Davy","Nilson","Gregor and Klaproth","de
Rio","Vauquelin","Gahn","unknown","Brandt","Cronstedt","unknown","unknown","Lecoq de Boiskaudran","Winkler","Albertus Magnus","Berzelius","Balard","Ramsay and Travers","Bunsen and Kirchhoff","Crawford","Gadolin","Klaproth","Hatchet","Scheele","Perrier and Segrè","Claus","Wollaston","Wollaston","unknown","Stromeyer and Hermann","Reich and Richter","unknown","unknown","von Reichenstein","Courtois","Ramsay and Travers","Kirchhoff and Bunsen","Davy","Mosander","von Hisinger and Berzelius","von Welsbach","von Welsbach","Marinsky and Glendenin","Lecoq de Boisbaudran","Demaçay","de Marignac","Mosander","Lecoq de Boisbaudran","Soret","Mosander","Cleve","de Marignac","Urbain","Coster and von Hevesy","Ekeberg","Gebrüder de Elhuyar","Noddack, Tacke and Berg","Tenant","Tenant and andere","Scaliger","unknown","unknown","Crookes","unknown","Agricola","Marie and Pierre Curie","Corson and MacKenzie","Dorn","Perey","Marie and Pierre Curie","Debiegne","Berzelius","Soddy, Cranston and Hahn","Klaproth","McMillan and Abelson","Seaborg","Seaborg","Seaborg","Seaborg","Seaborg","Seaborg","Seaborg","Seaborg","Seaborg","Ghiorso","Flerow oder Ghiorso","Flerow oder Ghiorso","Oganessian","Oganessian","Society for Heavy Ion Research","Society for Heavy Ion Research","Society for Heavy Ion Research","Society for Heavy Ion Research","Not Available","Not Available","Not Available","Not Available","Not Available";

```

public static String[] electronicConfig={"1s1","1s2","[He] 2s1","[He] 2s2","[He]
2s2 2p1","[He] 2s2 2p2","[He] 2s2 2p3","[He] 2s2 2p4","[He] 2s2 2p5","[He] 2s2
2p6","[Ne] 3s1","[Ne] 3s2","[Ne] 3s2 3p1","[Ne] 3s2 3p2","[Ne] 3s2 3p3","[Ne] 3s2
3p4","[Ne] 3s2 3p5","[Ne] 3s2 3p6","[Ar] 4s1","[Ar] 4s2","[Ar] 3d1 4s2","[Ar] 3d2
4s2","[Ar] 3d3 4s2","[Ar] 3d5 4s1","[Ar] 3d5 4s2","[Ar] 3d6 4s2","[Ar] 3d7 4s2","[Ar]
3d8 4s2","[Ar] 3d10 4s1","[Ar] 3d10 4s2","[Ar] 3d10 4s2 4p1","[Ar] 3d10 4s2 4p2","[Ar]
3d10 4s2 4p3","[Ar] 3d10 4s2 4p4","[Ar] 3d10 4s2 4p5","[Ar] 3d10 4s2 4p6","[Kr]
5s1","[Kr] 5s2","[Kr] 4d1 5s2","[Kr] 4d2 5s2","[Kr] 4d4 5s1","[Kr] 4d5 5s1","[Kr] 4d5
5s2","[Kr] 4d7 5s1","[Kr] 4d8 5s1","[Kr] 4d10","[Kr] 4d10 5s1","[Kr] 4d10 5s2","[Kr]
4d10 5s2 5p1","[Kr] 4d10 5s2 5p2","[Kr] 4d10 5s2 5p3","[Kr] 4d10 5s2 5p4","[Kr] 4d10
5s2 5p5","[Kr] 4d10 5s2 5p6","[Xe] 6s1","[Xe] 6s2","[Xe] 5d1 6s2","[Xe] 4f1 5d1
6s2","[Xe] 4f3 6s2","[Xe] 4f4 6s2","[Xe] 4f5 6s2","[Xe] 4f6 6s2","[Xe] 4f7 6s2","[Xe]
4f7 5d1 6s2","[Xe] 4f9 6s2","[Xe] 4f10 6s2","[Xe] 4f11 6s2","[Xe] 4f12 6s2","[Xe] 4f13
6s2","[Xe] 4f14 6s2","[Xe] 4f14 5d1 6s2","[Xe] 4f14 5d2 6s2","[Xe] 4f14 5d3 6s2","[Xe]
4f14 5d4 6s2","[Xe] 4f14 5d5 6s2","[Xe] 4f14 5d6 6s2","[Xe] 4f14 5d7 6s2","[Xe] 4f14
5d9 6s1","[Xe] 4f14 5d10 6s1","[Xe] 4f14 5d10 6s2","[Xe] 4f14 5d10 6s2 6p1","[Xe] 4f14
5d10 6s2 6p2","[Xe] 4f14 5d10 6s2 6p3","[Xe] 4f14 5d10 6s2 6p4","[Xe] 4f14 5d10 6s2
6p5","[Xe] 4f14 5d10 6s2 6p6","[Rn] 7s1","[Rn] 7s2","[Rn] 6d1 7s2","[Rn] 6d2 7s2","[Rn]
5f2 6d1 7s2","[Rn] 5f3 6d1 7s2","[Rn] 5f4 6d1 7s2","[Rn] 5f6 7s2","[Rn] 5f7 7s2","[Rn]
5f7 6d1 7s2","[Rn] 5f9 7s2","[Rn] 5f10 7s2","[Rn] 5f11 7s2","[Rn] 5f12 7s2","[Rn] 5f13
7s2","[Rn] 5f14 7s2","[Rn] 5f14 7s2 7p1","[Rn] 5f14 6d2 7s2","[Rn] 5f14 6d3 7s2","[Rn]
5f14 6d4 7s2","[Rn] 5f14 6d5 7s2","[Rn] 5f14 6d6 7s2","[Rn] 5f14 6d7 7s2","[Rn] 5f14
6d9 7s1","[Rn] 5f14 6d10 7s1","[Rn] 5f14 6d10 7s2","[Rn] 5f14 6d10 7s2 7p1","[Rn] 5f14
6d10 7s2 7p2","[Rn] 5f14 6d10 7s2 7p3","[Rn] 5f14 6d10 7s2 7p4","[Rn] 5f14 6d10 7s2
7p5","[Rn] 5f14 6d10 7s2 7p6"};

```

```
public static String[]
standardState={"gas","gas","solid","solid","solid","solid","gas","gas","gas","gas","sol
id","solid","solid","solid","solid","solid","gas","gas","solid","solid","solid","solid"
,"solid","solid","solid","solid","solid","solid","solid","solid","solid","solid","solid
","solid","liquid","gas","solid","solid","solid","solid","solid","solid","solid","solid"
```

```

", "solid", "solid", "solid", "solid", "solid", "solid", "solid", "solid", "solid", "solid", "gas", "solid",
", "solid", "solid", "solid", "solid", "solid", "solid", "solid", "solid", "solid", "solid", "solid", "solid",
", "solid", "solid", "solid", "solid", "solid", "solid", "solid", "solid", "solid", "solid", "solid", "solid",
d", "solid", "solid", "liquid", "solid", "solid", "solid", "solid", "solid", "solid", "gas", "solid", "solid",
d", "solid", "solid", "solid", "solid", "solid", "solid", "solid", "solid", "solid", "solid", "solid", "solid",
id", "Not Available", "Not Available", "Not Available", "Not Available", "Not Available", "Not
Available", "Not Available", "Not Available", "Not Available", "Not Available", "Not Available", "Not
Available", "Not Available", "Not Available", "Not Available", "Not Available", "Not Available", "Not
Available", "Not Available", "Not Available", "Not Available", "Not Available";

```

```

    public static String[] ionizationEnergy={"1312 kJ/mol", "2372.3, 5250.5
kJ/mol", "520.2, 7298.1, 11815 kJ/mol", "899.5, 1757.1, 14848.7, 21006.6 kJ/mol", "800.6,
2427.1, 3659.7, 25025.8, 32826.7 kJ/mol", "1086.5, 2352.6, 4620.5, 6222.7, 37831, 47277
kJ/mol", "1402.3, 2856, 4578.1, 7475, 9444.9, 53266.6, 64360 kJ/mol", "1313.9, 3388.3,
5300.5, 7469.2, 10989.5, 13326.5, 71330, 84078 kJ/mol", "1681, 3374.2, 6050.4, 8407.7,
11022.7, 15164.1, 17868, 92038.1, 106434.3 kJ/mol", "2080.7, 3952.3, 6122, 9371, 12177,
15238, 19999, 23069.5, 115379.5, 131432 kJ/mol", "495.8, 4562, 6910.3, 9543, 13354,
16613, 20117, 25496, 28932, 141362 kJ/mol", "737.7, 1450.7, 7732.7, 10542.5, 13630,
18020, 21711, 25661, 31653, 35458 kJ/mol", "577.5, 1816.7, 2744.8, 11577, 14842, 18379,
23326, 27465, 31853, 38473 kJ/mol", "786.5, 1577.1, 3231.6, 4355.5, 16091, 19805, 23780,
29287, 33878, 38726 kJ/mol", "1011.8, 1907, 2914.1, 4963.6, 6273.9, 21267, 25431, 29872,
35905, 40950 kJ/mol", "999.6, 2252, 3357, 4556, 7004.3, 8495.8, 27107, 31719, 36621,
43177 kJ/mol", "1251.2, 2298, 3822, 5158.6, 6542, 9362, 11018, 33604, 3.86×104, 43961
kJ/mol", "1520.6, 2665.8, 3931, 5771, 7238, 8781, 11995, 13842, 40760, 46186
kJ/mol", "418.8, 3052, 4420, 5877, 7975, 9590, 11343, 14944, 16963.7, 48610
kJ/mol", "589.8, 1145.4, 4912.4, 6491, 8153, 10496, 12270, 14206, 18191, 20385, 57110
kJ/mol", "633.1, 1235, 2388.6, 7090.6, 8843, 10679, 13310, 15250, 17370, 21726, 24102,
66320, 73010, 80160, 89490, 9.74×104, 1.056×105, 1.17×105, 124270, 547530, 582163
kJ/mol", "658.8, 1309.8, 2652.5, 4174.6, 9581, 11533, 13590, 16440, 18530, 20833, 25575,
28125, 76015, 83280, 90880, 1.007×105, 1.091×105, 1.178×105, 1.299×105, 137530, 602930
kJ/mol", "650.9, 1414, 2830, 4507, 6298.7, 12363, 14530, 16730, 19860, 22240, 24670,
29730, 32446, 86450, 94170, 1.023×105, 1.127×105, 1.216×105, 1.307×105, 1.434×105,
151440 kJ/mol", "652.9, 1590.6, 2987, 4743, 6702, 8744.9, 15455, 17820, 20190, 23580,
26130, 28750, 34230, 37066, 97510, 1.058×105, 1.143×105, 1.253×105, 1.347×105,
1.443×105, 1.577×105 kJ/mol", "717.3, 1509, 3248, 4940, 6990, 9220, 1.15×104, 18770,
2.14×104, 23960, 27590, 30330, 33150, 38880, 41987, 109480, 1.181×105, 1.271×105,
1.386×105, 1.485×105, 1.586×105 kJ/mol", "762.5, 1561.9, 2957, 5290, 7240, 9560, 12060,
14580, 22540, 25290, 2.8×104, 31920, 34830, 37840, 4.41×104, 47206, 1.222×105,
1.31×105, 1.405×105, 1.526×105, 1.63×105 kJ/mol", "760.4, 1648, 3232, 4950, 7670, 9840,
12440, 15230, 17959, 26570, 2.94×104, 3.24×104, 3.66×104, 3.97×104, 4.28×104, 49396,
52737, 134810, 145170, 1.547×105, 1.674×105 kJ/mol", "737.1, 1753, 3395, 5.3×103, 7339,
1.04×104, 1.28×104, 1.56×104, 1.86×104, 21670, 30970, 3.4×104, 3.71×104, 4.15×104,
4.48×104, 4.81×104, 55101, 58570, 1.487×105, 1.59×105, 1.694×105 kJ/mol", "745.5,
1957.9, 3555, 5536, 7.7×103, 9.9×103, 1.34×104, 1.6×104, 1.92×104, 2.24×104, 2.56×104,
3.56×104, 3.87×104, 4.2×104, 4.67×104, 5.02×104, 5.37×104, 6.11×104, 64702, 1.637×105,
1.741×105 kJ/mol", "906.4, 1733.3, 3833, 5731, 7970, 1.04×104, 1.29×104, 1.68×104,
1.96×104, 2.3×104, 2.64×104, 29990, 40490, 4.38×104, 4.73×104, 5.23×104, 5.59×104,
5.97×104, 6.73×104, 7.12×104, 1.791×105 kJ/mol", "578.8, 1979.3, 2963, 6180
kJ/mol", "762, 1537.5, 3302.1, 4411, 9020 kJ/mol", "947, 1798, 2735, 4837, 6043, 12310
kJ/mol", "941, 2045, 2973.7, 4144, 6590, 7880, 14990 kJ/mol", "1139.9, 2103, 3470, 4560,
5760, 8550, 9940, 1.86×104 kJ/mol", "1350.8, 2350.4, 3565, 5070, 6240, 7570, 10710,
12138, 22274, 25880, 2.97×104, 3.38×104, 3.77×104, 4.31×104, 4.75×104, 5.22×104,
5.71×104, 6.18×104, 7.58×104, 8.04×104, 8.53×104 kJ/mol", "403, 2633, 3860, 5080, 6850,

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[illegible]

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public static String[] groupBlock={"nonmetal","noble gas","alkali metal","alkaline
earth metal","metalloid","nonmetal","nonmetal","nonmetal","halogen","noble gas","alkali
metal","alkaline earth
metal","metal","metalloid","nonmetal","nonmetal","halogen","noble gas","alkali
metal","alkaline earth metal","transition metal","transition metal","transition
metal","transition metal","transition metal","transition metal","transition
metal","transition metal","transition metal","transition
metal","metal","metalloid","metalloid","nonmetal","halogen","noble gas","alkali
metal","alkaline earth metal","transition metal","transition metal","transition
metal","transition metal","transition metal","transition metal","transition
metal","transition metal","transition metal","transition
metal","metal","metal","metalloid","metalloid","halogen","noble gas","alkali
metal","alkaline earth
metal","lanthanoid","lanthanoid","lanthanoid","lanthanoid","lanthanoid","lanthanoid","l
anthanoid","lanthanoid","lanthanoid","lanthanoid","lanthanoid","lanthanoid","lanthanoid
","lanthanoid","lanthanoid","transition metal","transition metal","transition
metal","transition metal","transition metal","transition metal","transition
metal","transition metal","transition
metal","metal","metal","metal","metalloid","halogen","noble gas","alkali
metal","alkaline earth
metal","actinoid","actinoid","actinoid","actinoid","actinoid","actinoid","actinoid","ac
tinoid","actinoid","actinoid","actinoid","actinoid","actinoid","actinoid","transition
metal","transition metal","transition metal","transition metal","transition
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metal","transition metal","transition metal","transition metal","transition
metal","transition metal","post-transition metal","post-transition metal","post-
transition metal","post-transition metal","post-transition metal","noble gas"};
    public static String[]
bondingType={"diatomic","atomic","metallic","metallic","covalent network","covalent
network","diatomic","diatomic","atomic","atomic","metallic","metallic","metallic","meta
llic","covalent network","covalent network","covalent
network","atomic","metallic","metallic","metallic","metallic","metallic","metallic","me
tallic","metallic","metallic","metallic","metallic","metallic","metallic","metallic","m
etallic","metallic","covalent
network","atomic","metallic","metallic","metallic","metallic","metallic","metallic","me
tallic","metallic","metallic","metallic","metallic","metallic","metallic","metallic","m
etallic","metallic","covalent
network","atomic","metallic","metallic","metallic","metallic","metallic","metallic","me
tallic","metallic","metallic","metallic","metallic","metallic","metallic","metallic","m
etallic","metallic","metallic","metallic","metallic","metallic","metallic","metallic","
covalent
network","atomic","metallic","metallic","metallic","metallic","metallic","metallic","me
tallic","metallic","metallic","metallic","metallic","metallic","metallic","Not Available","Not
Available","Not Available","Not Available","Not Available","Not Available","Not
Available","Not Available","Not Available","Not Available","Not Available","Not
Available","Not Available","Not Available","Not Available","Not Available","Not
Available","Not Available","Not Available","Not Available"};
    public static String[] oxidationState={"-1, 1","","1","2","1, 2, 3","-4, -3, -2,
-1, 1, 2, 3, 4","-3, -2, -1, 1, 2, 3, 4, 5","-2, -1, 1, 2","-1","","-1, 1","1, 2","1,
3","-4, -3, -2, -1, 1, 2, 3, 4","-3, -2, -1, 1, 2, 3, 4, 5","-2, -1, 1, 2, 3, 4, 5,
6","-1, 1, 2, 3, 4, 5, 6, 7","","1","2","1, 2, 3","-1, 2, 3, 4","-1, 2, 3, 4","-2, -1,
1, 2, 3, 4, 5, 6","-3, -2, -1, 1, 2, 3, 4, 5, 6, 7","-2, -1, 1, 2, 3, 4, 5, 6","-1, 1,
2, 3, 4, 5","-1, 1, 2, 3, 4","1, 2, 3, 4","2","1, 2, 3","-4, 1, 2, 3, 4","-3, 2, 3,
5","-2, 2, 4, 6","-1, 1, 3, 4, 5, 7","2","1","2","1, 2, 3","1, 2, 3, 4","-1, 2, 3, 4,
5","-2, -1, 1, 2, 3, 4, 5, 6","-3, -1, 1, 2, 3, 4, 5, 6, 7","-2, 1, 2, 3, 4, 5, 6, 7,
8","-1, 1, 2, 3, 4, 5, 6","2, 4","1, 2, 3","2","1, 2, 3","-4, 2, 4","-3, 3, 5","-2, 2,
4, 5, 6","-1, 1, 3, 5, 7","2, 4, 6, 8","1","2","2, 3","2, 3, 4","2, 3, 4","2,
3","3","2, 3","2, 3","1, 2, 3","1, 3, 4","2, 3","3","3","2, 3","2, 3","3","2, 3,
4","-1, 2, 3, 4, 5","-2, -1, 1, 2, 3, 4, 5, 6","-3, -1, 1, 2, 3, 4, 5, 6, 7","-2, -1,
1, 2, 3, 4, 5, 6, 7, 8","-3, -1, 1, 2, 3, 4, 5, 6","2, 4, 5, 6","-1, 1, 2, 3, 5","1, 2,
4","1, 3","-4, 2, 4","-3, 3, 5","-2, 2, 4, 6","-1, 1, 3, 5","2","1","2","3","2, 3,
4","3, 4, 5","3, 4, 5, 6","3, 4, 5, 6, 7","3, 4, 5, 6, 7","2, 3, 4, 5, 6","3, 4","3,
4","2, 3, 4","2, 3","2, 3","2, 3","2, 3","3","4","Not Available","Not Available","Not
Available","Not Available","Not Available","Not Available","Not Available","Not
Available","Not Available","Not Available","Not Available","Not Available","Not
Available","Not Available"};
    public static String[]
vanderWallRadius={"1.2","1.4","1.82","N/A","N/A","1.7","1.55","1.52","1.47","1.54","2.2
7","1.73","N/A","2.1","1.8","1.8","1.75","1.88","2.75","N/A","N/A","N/A","N/A","N/A","N
/A","N/A","N/A","1.63","1.4","1.39","1.87","","1.85","1.9","1.85","2.02","N/A","N/A","N
/A","N/A","N/A","N/A","N/A","N/A","N/A","1.63","1.72","1.58","1.93","2.17","","2.06","1
.98","2.16","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/
A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","1.75","1.66","1.55","1.
96","2.02","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","1.86","N/A","N/A","N/
A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A",

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"N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A"};
    public static String[]
atomicRadius={"0.53","0.31","1.67","1.12","0.87","0.67","0.56","0.48","0.42","0.38","1.
9","1.45","1.18","1.11","0.98","0.88","0.79","0.71","2.43","1.94","1.84","1.76","1.71",
"1.66","1.61","1.56","1.52","1.49","1.45","1.42","1.36","1.25","1.14","1.03","0.94","0.
88","2.65","2.19","2.12","2.06","1.98","1.9","1.83","1.78","1.73","1.69","1.65","1.61",
"1.56","1.45","1.33","1.23","1.15","1.08","2.98","2.53","1.95","1.85","2.47","2.06","2.
05","2.38","2.31","2.33","2.25","2.28","2.26","2.26","2.22","2.22","2.17","2.08","2",
.93","1.88","1.85","1.8","1.77","1.74","1.71","1.56","1.54","1.43","1.35","1.27","1.2",
"N/A","N/A","1.95","1.8","1.8","1.75","1.75","1.75","1.75","N/A","N/A","N/A","N/A","N/A",
"N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A",
"N/A","N/A","N/A","N/A"};
    public static String[]
ionicRadius={"0.25","0.31","1.45","1.05","0.85","0.7","0.65","0.6","0.5","0.38","1.8","
1.5","1.25","1.1","1","1","1","0.71","2.2","1.8","1.6","1.4","1.35","1.4","1.4","1.4","
1.35","1.35","1.35","1.35","1.3","1.25","1.15","1.15","1.15","0.88","2.35","2",
1.85","1.55","1.45","1.45","1.35","1.3","1.35","1.4","1.6","1.55","1.55","1.45","1.45","1.4",
1.4","1.08","2.6","2.15","1.95","1.85","1.85","1.85","1.85","1.85","1.85","1.8","1.75",
"1.75","1.75","1.75","1.75","1.75","1.75","1.55","1.45","1.35","1.35","1.3","1.35","1.3
5","1.35","1.5","1.9","1.8","1.6","1.9","1.27","1.2","N/A","2.15","1.95","1.8","1.8","1
.75","1.75","1.75","1.75","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A",
"N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A"};
    public static String[]
covalentRadius={"0.37","0.32","1.34","0.9","0.82","0.77","0.75","0.73","0.71","0.69","1
.54","1.3","1.18","1.11","1.06","1.02","0.99","0.97","1.96","1.74","1.44","1.36","1.25",
"1.27","1.39","1.25","1.26","1.21","1.38","1.31","1.26","1.22","1.19","1.16","1.14","1
.1","2.11","1.92","1.62","1.48","1.37","1.45","1.56","1.26","1.35","1.31","1.53","1.48",
"1.44","1.41","1.38","1.35","1.33","1.3","2.25","1.98","1.69","N/A","N/A","N/A","N/A",
"N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","1.6","1.5","1.38","1.46","1.59",
"1.28","1.37","1.28","1.44","1.49","1.48","1.47","1.46","N/A","N/A","1.45","N/A","N/A",
"N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A",
"N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A",
"N/A"};
    public static String[]
crystalRadius={"0.1","N/A","0.9","0.41","0.25","0.29","0.3","1.21","1.19","N/A","1.16",
"0.86","0.53","0.4","0.31","0.43","1.67","N/A","1.52","1.14","0.89","0.75","0.68","0.76",
"0.81","0.69","0.54","0.7","0.71","0.74","0.76","0.53","0.72","0.56","1.82","N/A","1.
66","1.32","1.04","0.86","0.78","0.79","0.79","0.82","0.81","0.78","1.29","0.92","0.94",
"0.69","0.9","1.11","2.06","0.62","1.81","1.49","1.36","1.15","1.32","1.3","1.28","1.1",
"1.31","1.08","1.18","1.05","1.04","1.03","1.02","1.13","1","0.85","0.78","0.74","0.7
7","0.77","0.77","0.74","1.51","0.83","1.03","1.49","1.17","1.08","0.76","N/A","1.94",
1.62","1.26","1.19","1.09","0.87","N/A","1","1.12","1.11","N/A","N/A","N/A","N/A","N/A",
"N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A","N/A",
"N/A","N/A","N/A"};
    public static String[]
knownIsotopes={"1H, 2H, 3H, 4H, 5H, 6H, 7H","3He, 4He, 5He, 6He, 7He, 8He, 9He, 10He",
"3Li, 4Li, 5Li, 6Li, 7Li, 8Li, 9Li, 10Li, 11Li, 12Li","5Be, 6Be, 7Be, 8Be, 9Be, 10Be, 11
Be, 12Be, 13Be, 14Be, 15Be, 16Be","6B, 7B, 8B, 9B, 10B, 11B, 12B, 13B, 14B, 15B, 16B, 1
7B, 18B, 19B","8C, 9C, 10C, 11C, 12C, 13C, 14C, 15C, 16C, 17C, 18C, 19C, 20C, 21C, 22C",
"10N, 11N, 12N, 13N, 14N, 15N, 16N, 17N, 18N, 19N, 20N, 21N, 22N, 23N, 24N, 25N","120,
130, 140, 150, 160, 170, 180, 190, 200, 210, 220, 230, 240, 250, 260, 270, 280","14F,
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  "AlphaEmission","AlphaEmission","BetaPlusDecay","AlphaEmission","BetaDecay","AlphaEmissi
  on","BetaDecay","AlphaEmission","AlphaEmission","AlphaEmission","AlphaEmission","AlphaEmissi
  on","AlphaEmission","AlphaEmission","AlphaEmission","AlphaEmission","AlphaEmission","AlphaEmissio
  n","AlphaEmission","AlphaEmission","AlphaEmission","AlphaEmission","AlphaEmission","AlphaEmissi
  on","AlphaEmission","AlphaEmission","AlphaEmission","AlphaEmission","AlphaEmission","AlphaEmissi
  on","AlphaEmission","AlphaEmission","AlphaEmission","AlphaEmission","AlphaEmission","AlphaEmissio
  n","AlphaEmission","N/A","AlphaEmission"};

```

```

    public static String[]

```

```

elementColor={"Colorless","Colorless","Silver","SlateGray","Black","Black","Colorless",
  "Colorless","Colorless","Colorless","Silver","Silver","Silver","Gray","Colorless","Yell
  ow","Yellow","Colorless","Silver","Silver","Silver","Silver","Silver","Silver","Silver",
  "Gray","Gray","Gray","Copper","SlateGray","Silver","Gray","Silver","Gray","Red","Color
  less","Silver","Silver","Silver","Silver","Silver","Gray","Gray","Silver","Silver","Silver","Sil
  ver","Silver","Silver","Silver","Silver","Silver","Silver","Silver","SlateGray","Colorless","Sil
  ver","Silver","Silver","Silver","Silver","Silver","Silver","Silver","Silver","Silver","Silver","
  Silver","Silver","Silver","Silver","Silver","Silver","Silver","Silver","Gray","Gray","Gray","Gra
  y","SlateGray","Silver","Gray","Gold","Silver","Silver","SlateGray","Gray","Silver","Si
  lver","Colorless","Silver","Silver","Silver","Silver","Silver","Silver","Silver","Silver","Silve

```

[illegible]

References:

- https://en.wikipedia.org/wiki/List_of_data_references_for_chemical_elements
- <http://mwcsvimport.pronique.com/library/view/54/Periodic%20Table%20of%20Elements.csv>
- <https://github.com/andrejewski/periodic-table/blob/master/data.csv>
- <https://chemistry.stackexchange.com/questions/2793/where-can-i-find-a-downloadable-spreadsheet-of-element-properties>
- <https://www.kaggle.com/jwaitze/tablesoftheelements>



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I'm a physicist specializing in computational material science with a PhD in Physics from Friedrich-Schiller University Jena, Germany. I write efficient codes for simulating light-matter interactions at atomic scales. I like to develop Physics, DFT, and Machine Learning related apps and software from time to time. Can code in most of the popular languages. I like to share my knowledge in Physics and applications using this Blog and a YouTube channel.

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