

[illegible]

Diagram illustrating the periodic table layout and the relationship between atomic number, density, atomic weight, and wavelength-energy relationship.

Atomic no. **Density (g/cm³)[†]** **Atomic wt.**

Symbol
Element name

Emission line **Wavelength (Å)** **2θ angle**

Wavelength-energy relationship:
$$\lambda (\text{Å}) = \frac{12.4}{E (\text{keV})}$$

Bragg's Law: $n\lambda = 2d \sin \theta$

† Density values for gaseous elements are for liquids at the boiling point

The periodic table is shown with elements grouped by atomic number (1 to 118) and their corresponding symbols, names, and atomic weights. The table is color-coded by groups: 1 (blue), 2 (orange), 3-10 (green), 11-18 (yellow), 19-20 (purple), 21-30 (pink), 31-40 (light blue), 41-50 (light green), 51-60 (light orange), 61-70 (light purple), 71-80 (light blue), 81-90 (light green), 91-100 (light orange), 101-110 (light purple), 111-118 (light blue).

Key elements highlighted include Hydrogen (H), Helium (He), Lithium (Li), Beryllium (Be), Boron (B), Carbon (C), Nitrogen (N), Oxygen (O), Fluorine (F), Neon (Ne), Sodium (Na), Magnesium (Mg), Aluminum (Al), Silicon (Si), Phosphorus (P), Sulfur (S), Chlorine (Cl), Argon (Ar), Potassium (K), Calcium (Ca), Scandium (Sc), Titanium (Ti), Vanadium (V), Chromium (Cr), Manganese (Mn), Iron (Fe), Cobalt (Co), Nickel (Ni), Copper (Cu), Zinc (Zn), Gallium (Ga), Germanium (Ge), Arsenic (As), Selenium (Se), Bromine (Br), Krypton (Kr), Rubidium (Rb), Strontium (Sr), Yttrium (Y), Zirconium (Zr), Niobium (Nb), Molybdenum (Mo), Technetium (Tc), Ruthenium (Ru), Rhodium (Rh), Palladium (Pd), Silver (Ag), Cadmium (Cd), Indium (In), Tin (Sn), Antimony (Sb), Tellurium (Te), Iodine (I), Xenon (Xe), Cesium (Cs), Barium (Ba), Lanthanum (La), Hafnium (Hf), Tantalum (Ta), Tungsten (W), Rhenium (Re), Osmium (Os), Iridium (Ir), Platinum (Pt), Gold (Au), Mercury (Hg), Thallium (Tl), Lead (Pb), Bismuth (Bi), Polonium (Po), Astatine (At), Radon (Rn), Francium (Fr), Radium (Ra), Actinium (Ac), Cerium (Ce), Praseodymium (Pr), Neodymium (Nd), Promethium (Pm), Samarium (Sm), Europium (Eu), Gadolinium (Gd), Terbium (Tb), Dysprosium (Dy), Holmium (Ho), Erbium (Er), Thulium (Tm), Ytterbium (Yb), Lutetium (Lu), Thorium (Th), Protactinium (Pa), Uranium (U), Neptunium (Np), Plutonium (Pu), Americium (Am), Curium (Cm), Berkelium (Bk), Californium (Cf), Einsteinium (Es), Fermium (Fm), Mendelevium (Md), Nobelium (No), and Lawrencium (Lr).

Color key: Analyzing crystals and 2d-values

LiF (200)	Lithium fluoride	4.027 Å	RX4	InSb	7.481 Å	RX45	Synthetic multilayer	110 Å [‡]
LiF (220)	Lithium fluoride	2.848 Å	RX9	Graphite	6.708 Å	RX61	Synthetic multilayer	160 Å [‡]
PET	Pentaerythritol	8.742 Å	RX25	Synthetic multilayer	30 Å [‡]	RX61F	Synthetic multilayer	160 Å [‡]
Ge	Germanium	6.533 Å	RX35	Synthetic multilayer	55 Å [‡]	RX75	Synthetic multilayer	160 Å [‡]
TAP	Thallium acid phthalate	25.76 Å	RX40	Synthetic multilayer	80 Å [‡]	RX80	Synthetic multilayer	200 Å [‡]

Nominal value

Detector selection key:

Detector	ATOMIC NUMBER RANGE		
	K-lines	L-lines	M-lines
<i>Flow-proportional</i>	4-21 (Be-Sc)	20-55 (Ca-Cs)	72-92 (Hf-U)
<i>Scintillation</i>	22-57 (Ti-La)	56-92 (Ba-U)	--

1002064-A Periodic Table of Elements

