

nomi in **blu** sono liquidi a temperatura ambiente
nomi in **rosso** sono gas a temperatura ambiente
nomi in **nero** sono solidi a temperatura ambiente

Tavola Periodica degli Elementi

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| 1A 1 H 1s ¹ hydrogen 1.008 | 2A 2 He 1s ² helium 4.003 | | | | | | | | | | | | | | | | |
| 3 Li [He]2s ¹ lithium 6.941 | 4 Be [He]2s ² beryllium 9.012 | | | | | | | | | | | | | | | | |
| 11 Na [Ne]3s ¹ sodium 22.99 | 12 Mg [Ne]3s ² magnesium 24.31 | 3B | 4B | 5B | 6B | 7B | 8B | | | 11B | 12B | 5 B [He]2s ² 2p ¹ boron 10.81 | 6 C [He]2s ² 2p ² carbon 12.01 | 7 N [He]2s ² 2p ³ nitrogen 14.01 | 8 O [He]2s ² 2p ⁴ oxygen 16.00 | 9 F [He]2s ² 2p ⁵ fluorine 19.00 | 10 Ne [He]2s ² 2p ⁶ neon 20.18 |
| 19 K [Ar]4s ¹ potassium 39.10 | 20 Ca [Ar]4s ² calcium 40.08 | 21 Sc [Ar]4s ¹ 3d ² scandium 44.96 | 22 Ti [Ar]4s ¹ 3d ³ titanium 47.88 | 23 V [Ar]4s ¹ 3d ⁴ vanadium 50.94 | 24 Cr [Ar]4s ¹ 3d ⁵ chromium 52.00 | 25 Mn [Ar]4s ² 3d ⁵ manganese 54.94 | 26 Fe [Ar]4s ² 3d ⁶ iron 55.85 | 27 Co [Ar]4s ² 3d ⁷ cobalt 58.93 | 28 Ni [Ar]4s ² 3d ⁸ nickel 58.69 | 29 Cu [Ar]4s ¹ 3d ¹⁰ copper 63.55 | 30 Zn [Ar]4s ² 3d ¹⁰ zinc 65.39 | 31 Ga [Ar]4s ² 3d ¹⁰ 4p ¹ gallium 69.72 | 32 Ge [Ar]4s ² 3d ¹⁰ 4p ² germanium 72.58 | 33 As [Ar]4s ² 3d ¹⁰ 4p ³ arsenic 74.92 | 34 Se [Ar]4s ² 3d ¹⁰ 4p ⁴ selenium 78.96 | 35 Br [Ar]4s ² 3d ¹⁰ 4p ⁵ bromine 79.90 | 36 Kr [Ar]4s ² 3d ¹⁰ 4p ⁶ krypton 83.80 |
| 37 Rb [Kr]5s ¹ rubidium 85.47 | 38 Sr [Kr]5s ² strontium 87.62 | 39 Y [Kr]5s ² 4d ¹ yttrium 88.91 | 40 Zr [Kr]5s ¹ 4d ³ zirconium 91.22 | 41 Nb [Kr]5s ¹ 4d ⁴ niobium 92.91 | 42 Mo [Kr]5s ² 4d ⁵ molybdenum 95.94 | 43 Tc [Kr]5s ² 4d ⁵ technetium (98) | 44 Ru [Kr]5s ² 4d ⁶ ruthenium 101.1 | 45 Rh [Kr]5s ² 4d ⁷ rhodium 102.9 | 46 Pd [Kr]4d ¹⁰ palladium 106.4 | 47 Ag [Kr]5s ¹ 4d ¹⁰ silver 107.9 | 48 Cd [Kr]5s ² 4d ¹⁰ cadmium 112.4 | 49 In [Kr]5s ² 4d ¹⁰ 5p ¹ indium 114.8 | 50 Sn [Kr]5s ² 4d ¹⁰ 5p ² tin 118.7 | 51 Sb [Kr]5s ² 4d ¹⁰ 5p ³ antimony 121.8 | 52 Te [Kr]5s ² 4d ¹⁰ 5p ⁴ tellurium 127.6 | 53 I [Kr]5s ² 4d ¹⁰ 5p ⁵ iodine 126.9 | 54 Xe [Kr]5s ² 4d ¹⁰ 5p ⁶ xenon 131.3 |
| 55 Cs [Xe]6s ¹ cesium 132.9 | 56 Ba [Xe]6s ² barium 137.3 | 57 La* [Xe]6s ² 5d ¹ lanthanum 138.9 | 72 Hf [Xe]6s ² 4f ¹⁴ 5d ² hafnium 178.5 | 73 Ta [Xe]6s ² 4f ¹⁴ 5d ³ tantalum 180.9 | 74 W [Xe]6s ² 4f ¹⁴ 5d ⁴ tungsten 183.9 | 75 Re [Xe]6s ² 4f ¹⁴ 5d ⁵ rhenium 186.2 | 76 Os [Xe]6s ² 4f ¹⁴ 5d ⁶ osmium 190.2 | 77 Ir [Xe]6s ² 4f ¹⁴ 5d ⁷ iridium 190.2 | 78 Pt [Xe]6s ¹ 4f ¹⁴ 5d ⁹ platinum 195.1 | 79 Au [Xe]6s ¹ 4f ¹⁴ 5d ¹⁰ gold 197.0 | 80 Hg [Xe]6s ² 4f ¹⁴ 5d ¹⁰ mercury 200.5 | 81 Tl [Xe]6s ² 4f ¹⁴ 5d ¹⁰ 6p ¹ thallium 204.4 | 82 Pb [Xe]6s ² 4f ¹⁴ 5d ¹⁰ 6p ² lead 207.2 | 83 Bi [Xe]6s ² 4f ¹⁴ 5d ¹⁰ 6p ³ bismuth 208.9 | 84 Po [Xe]6s ² 4f ¹⁴ 5d ¹⁰ 6p ⁴ polonium (209) | 85 At [Xe]6s ² 4f ¹⁴ 5d ¹⁰ 6p ⁵ astatine (210) | 86 Rn [Xe]6s ² 4f ¹⁴ 5d ¹⁰ 6p ⁶ radon (222) |
| 87 Fr [Rn]7s ¹ francium (223) | 88 Ra [Rn]7s ² radium (226) | 89 Ac~ [Rn]7s ² 6d ¹ actinium (227) | 104 Rf [Rn]7s ² 5f ¹⁴ 6d ² rutherfordium (257) | 105 Db [Rn]7s ² 5f ¹⁴ 6d ³ dubnium (260) | 106 Sg [Rn]7s ² 5f ¹⁴ 6d ⁴ seaborgium (263) | 107 Bh [Rn]7s ² 5f ¹⁴ 6d ⁵ bohrium (262) | 108 Hs [Rn]7s ² 5f ¹⁴ 6d ⁶ hassium (265) | 109 Mt [Rn]7s ² 5f ¹⁴ 6d ⁷ meitnerium (266) | 110 Ds [Rn]7s ¹ 5f ¹⁴ 6d ⁹ darmstadtium (271) | 111 Uuu (272) | 112 Uub (277) | 114 Uuq (296) | | 116 Uuh (298) | | 118 Uuo (?) | |

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Metalli alcalini

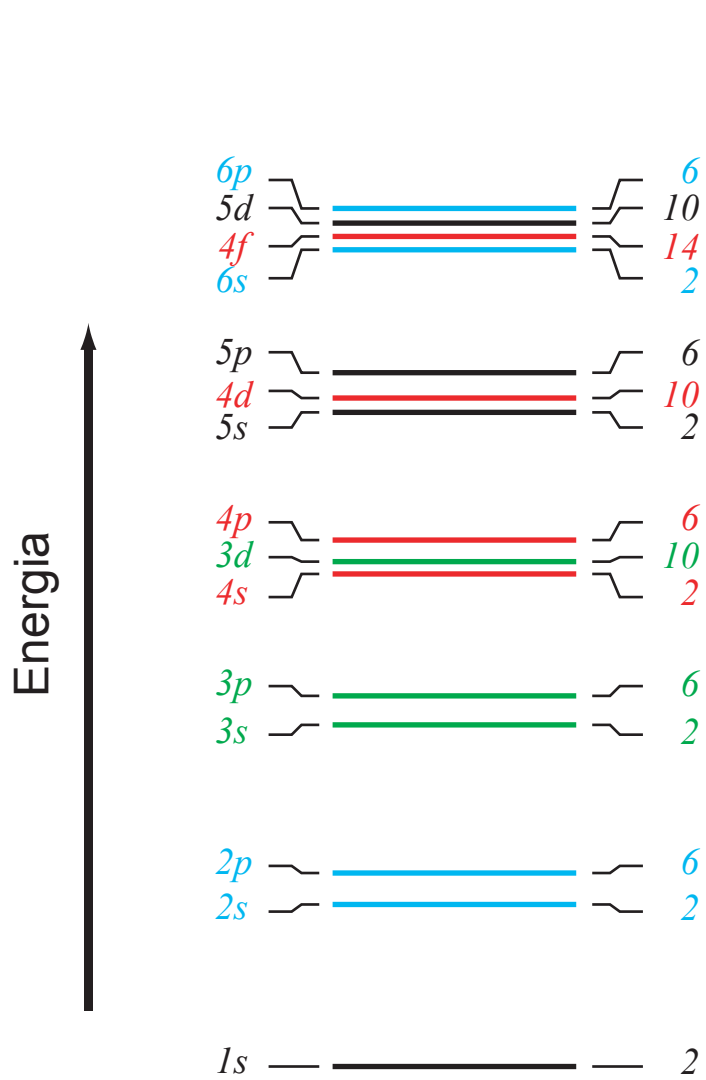
Serie dei Lantanidi

Serie degli Attinidi

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| 58 Ce [Xe]6s ² 4f ¹ 5d ¹ cerium 140.1 | 59 Pr [Xe]6s ² 4f ³ praseodymium 140.9 | 60 Nd [Xe]6s ² 4f ⁴ neodymium 144.2 | 61 Pm [Xe]6s ² 4f ⁵ promethium (147) | 62 Sm [Xe]6s ² 4f ⁶ samarium (150.4) | 63 Eu [Xe]6s ² 4f ⁷ europium 152.0 | 64 Gd [Xe]6s ² 4f ⁷ 5d ¹ gadolinium 157.3 | 65 Tb [Xe]6s ² 4f ⁹ terbium 158.9 | 66 Dy [Xe]6s ² 4f ¹⁰ dysprosium 162.5 | 67 Ho [Xe]6s ² 4f ¹¹ holmium 164.9 | 68 Er [Xe]6s ² 4f ¹² erbio 167.3 | 69 Tm [Xe]6s ² 4f ¹³ thulium 168.9 | 70 Yb [Xe]6s ² 4f ¹⁴ ytterbium 173.0 | 71 Lu [Xe]6s ² 4f ¹⁴ 5d ¹ lutetium 175.0 |
| 90 Th [Rn]7s ² 6d ² thorium 232.0 | 91 Pa [Rn]7s ² 5f ² 6d ¹ protactinium (231) | 92 U [Rn]7s ² 5f ³ 6d ¹ uranium (238) | 93 Np [Rn]7s ² 5f ⁴ 6d ¹ neptunium (237) | 94 Pu [Rn]7s ² 5f ⁶ plutonium (242) | 95 Am [Rn]7s ² 5f ⁷ americium (243) | 96 Cm [Rn]7s ² 5f ⁷ 6d ¹ curium (247) | 97 Bk [Rn]7s ² 5f ⁹ berkelium (247) | 98 Cf [Rn]7s ² 5f ¹⁰ californium (249) | 99 Es [Rn]7s ² 5f ¹¹ einsteinium (254) | 100 Fm [Rn]7s ² 5f ¹² fermium (253) | 101 Md [Rn]7s ² 5f ¹³ mendelevium (256) | 102 No [Rn]7s ² 5f ¹⁴ nobelium (254) | 103 Lr [Rn]7s ² 5f ¹⁴ 6d ¹ lawrencium (257) |

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Gas nobili

Riempimento dei sottogusci (subshell)

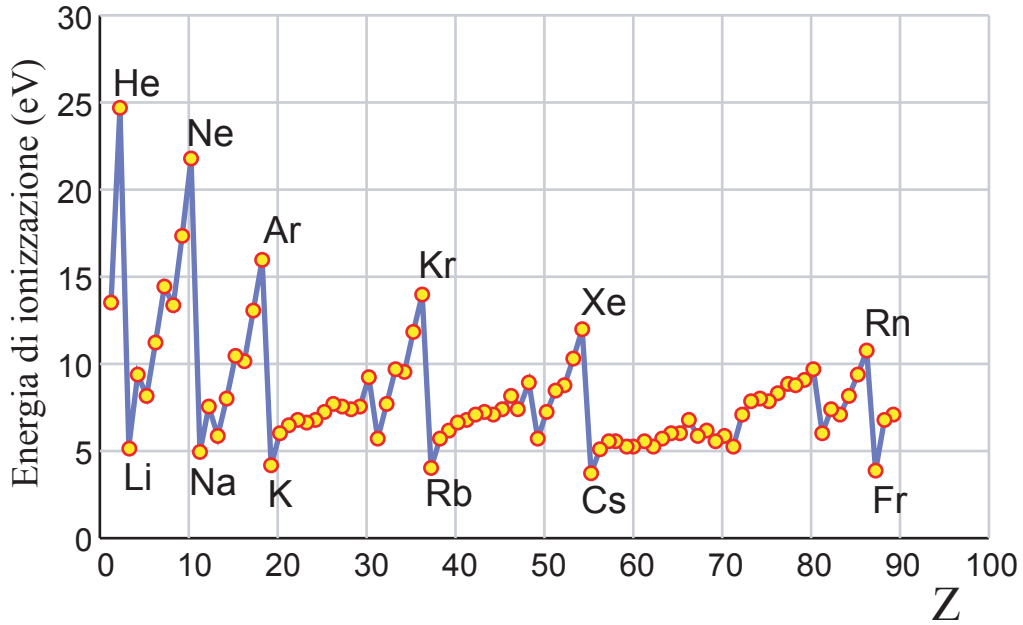


Ordinamento delle subshell per energia crescente.
L'ordine e' corretto, la scala e' indicativa

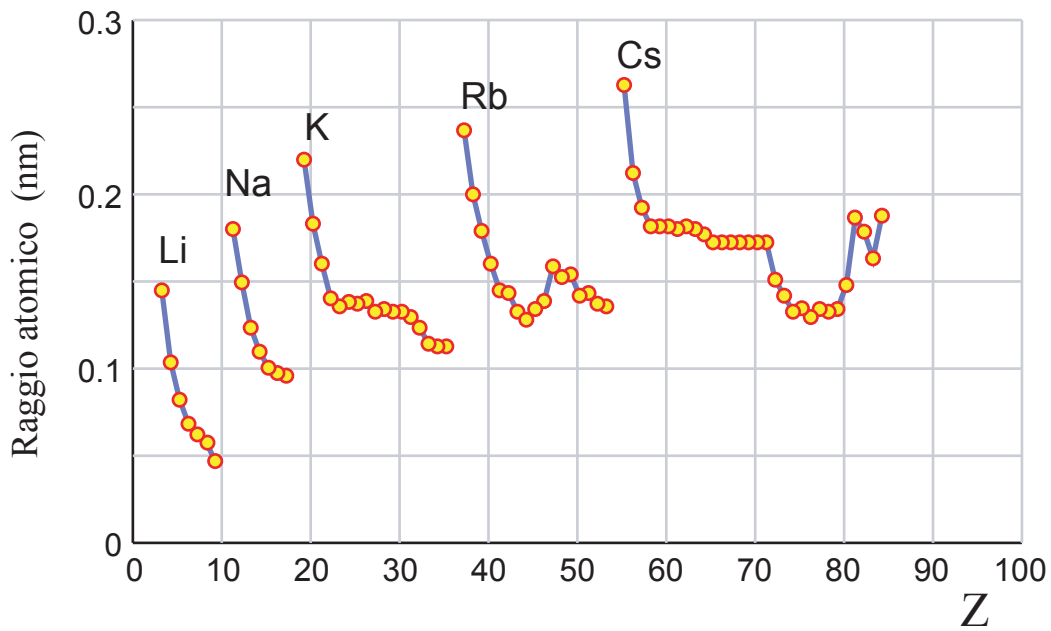
| | Numero quantico orbitale | | | |
|------------|--------------------------|------------|------------|------------|
| | <i>l=0</i> | <i>l=1</i> | <i>l=2</i> | <i>l=3</i> |
| <i>n=6</i> | 6s | 6p | 6d | 6f |
| <i>n=5</i> | 5s | 5p | 5d | 5f |
| <i>n=4</i> | 4s | 4p | 4d | 4f |
| <i>n=3</i> | 3s | 3p | 3d | |
| <i>n=2</i> | 2s | 2p | | |
| <i>n=1</i> | 1s | | | |

Riempimento degli stati elettronici seguendo il principio di esclusione di Pauli e la regola di Hund

| Atomo | $1s$ | $2s$ | $2p$ | | | Configurazione elettronica |
|-------|------|------|------|--|--|----------------------------|
| Li | | | | | | $1s^2 2s^1$ |
| Be | | | | | | $1s^2 2s^2$ |
| B | | | | | | $1s^2 2s^2 2p^1$ |
| C | | | | | | $1s^2 2s^2 2p^2$ |
| N | | | | | | $1s^2 2s^2 2p^3$ |
| O | | | | | | $1s^2 2s^2 2p^4$ |
| F | | | | | | $1s^2 2s^2 2p^5$ |
| Ne | | | | | | $1s^2 2s^2 2p^6$ |



Energia di ionizzazione di atomi neutri
(energia per strappare l'elettrone legato piu' debolmente)



Raggi atomici
(determinati dalla separazione tra gli atomi in cristalli. Questi raggi sono differenti dal raggio medio della nuvola elettronica in atomi liberi)