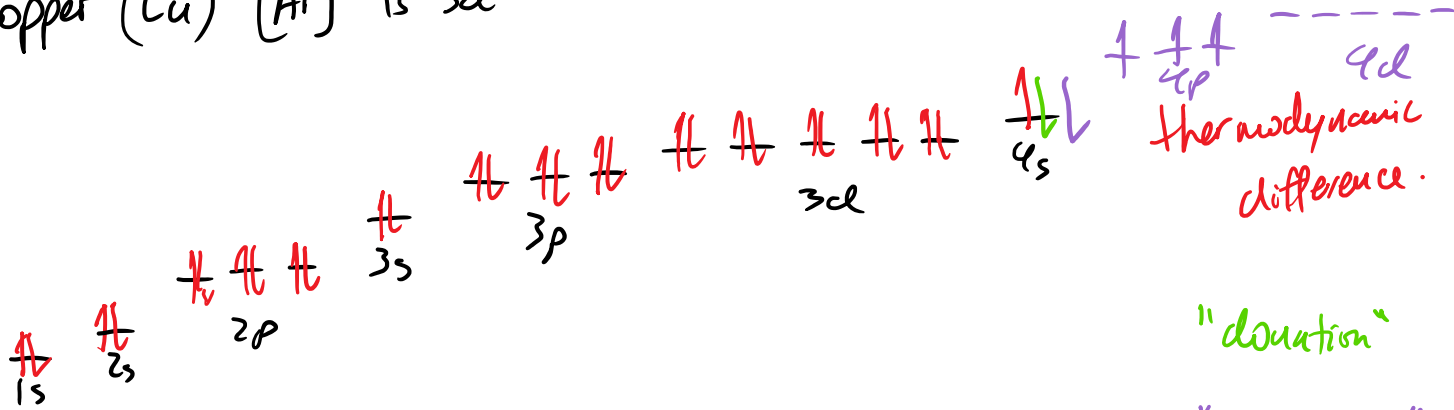


Copper (Cu) $[Ar] 4s^1 3d^{10}$



140 pm

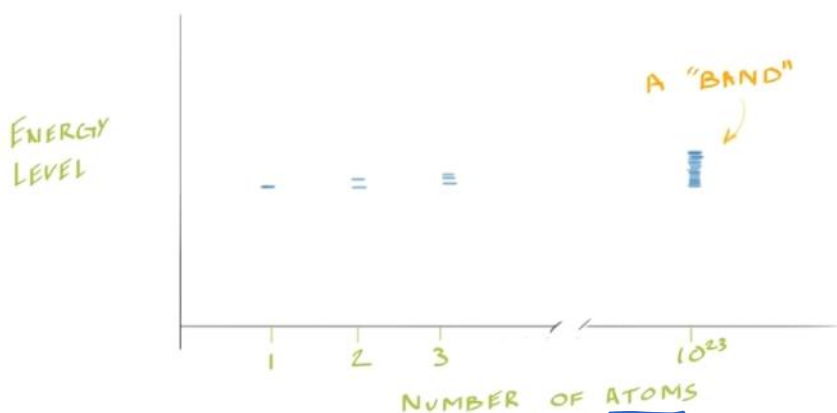
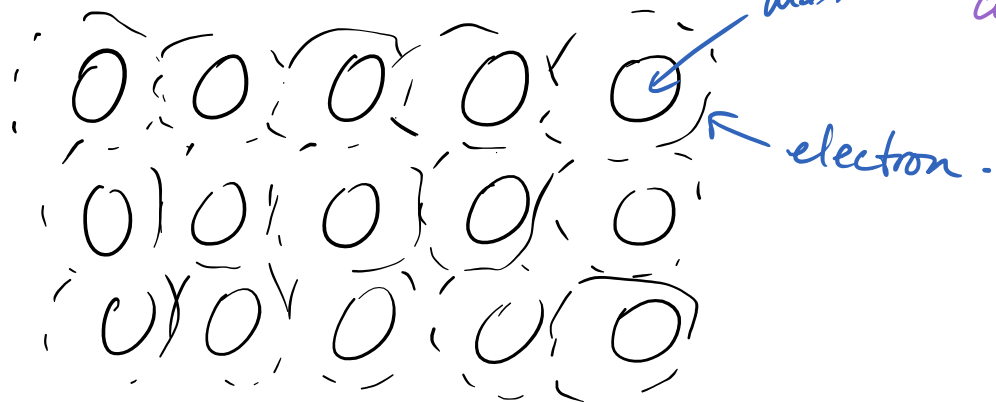


Figure 11. A schematic depiction of a particular energy level in an isolated atom, two atoms, three atoms, and so on up to a massive collection of atoms, as in a solid. The number of energy levels in a solid, for a corresponding single energy level in an isolated atom, is equal to the number of atoms, so that when we have a solid there are so many closely spaced energy levels as to be essentially continuous. We call this a band.

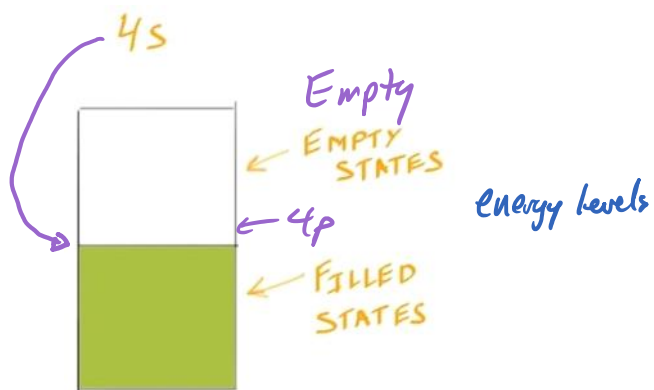
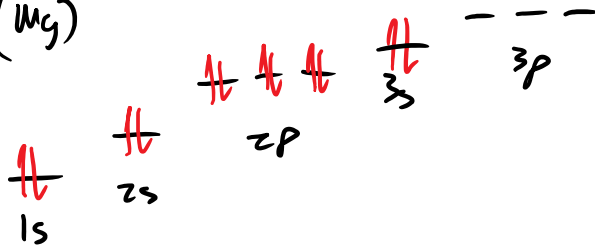
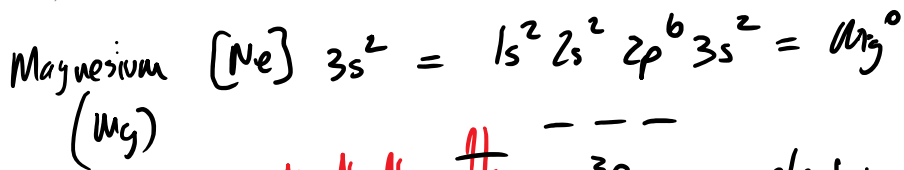


Figure 12. The band structure for copper.

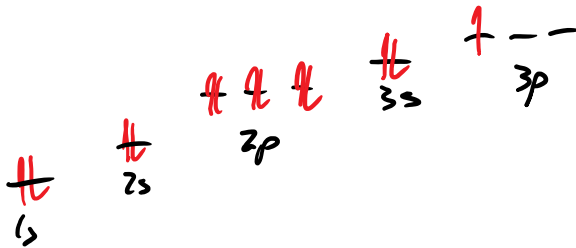
Magnesium, Aluminum

November 11, 2024 8:54 AM



electric conductivity

- weak / not good
- semi-conductor



electric conductivity (back in the day)
 - "ok" conductivity

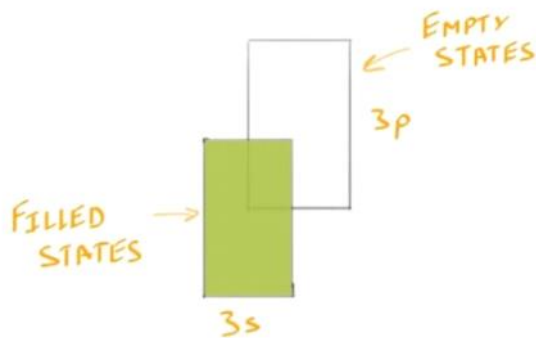
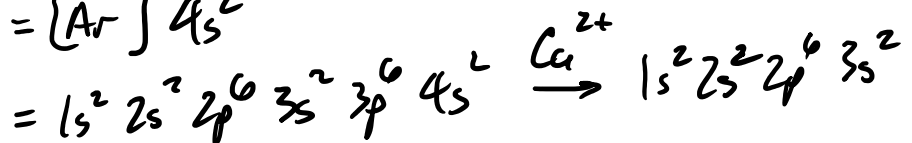
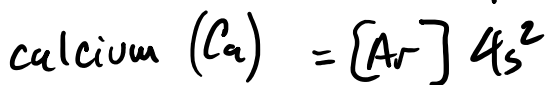
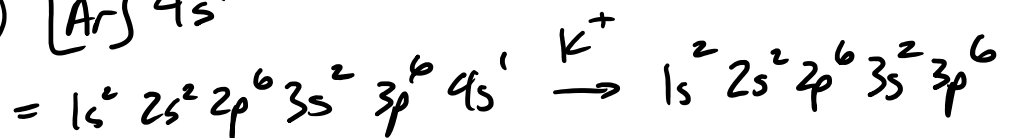
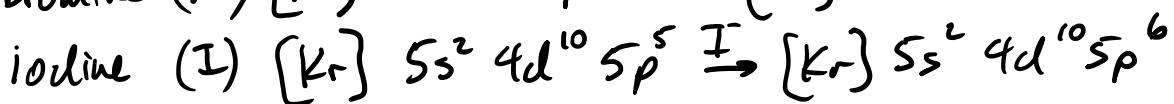
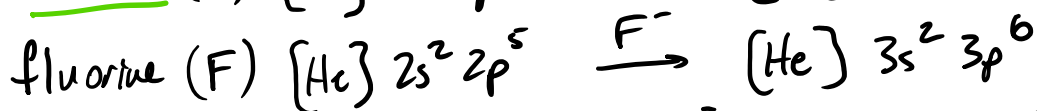
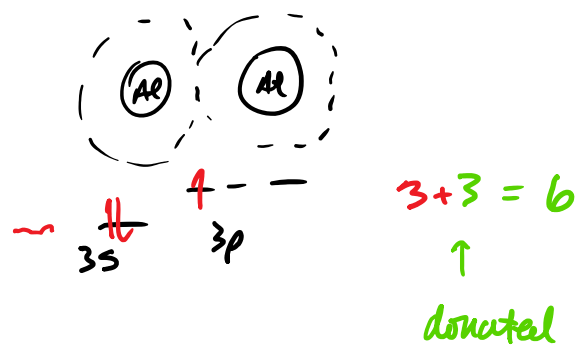
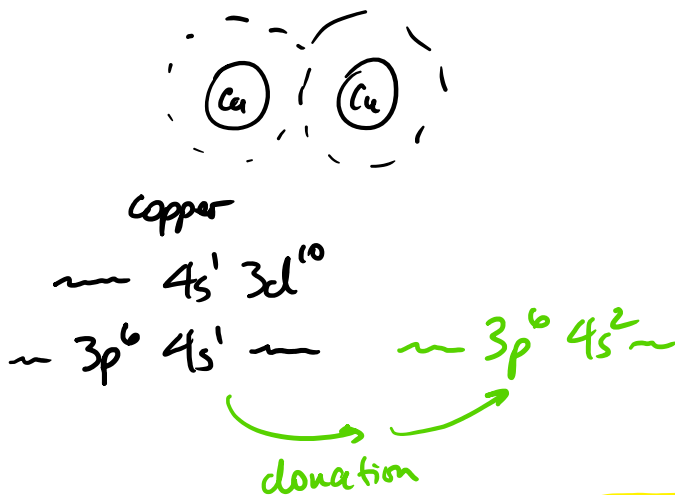


Figure 13. The band structure for magnesium.



Figure 12. The band structure for ~~aluminum~~ aluminum

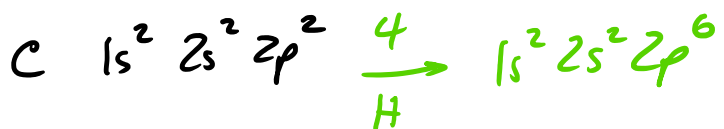
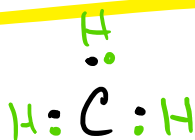
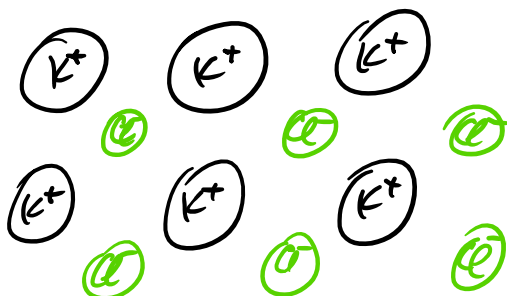
Octet rule $"ns^2 np^6"$ - 'stable' / more stable

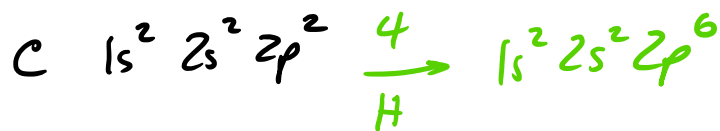
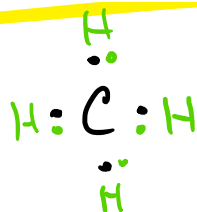


175 pm

KCl

275 pm





PERIODIC TABLE OF ELEMENTS

<div>PubChem</div>																		2 He Helium 1s ²																	
1 H Hydrogen 1s ¹		<div>1 H Hydrogen 1s¹</div> <div>Atomic Number Symbol Name Electron Configuration</div>																																	
3 Li Lithium [He]2s ¹		4 Be Beryllium [He]2s ²																				5 B Boron [He]2s ² 2p ¹		6 C Carbon [He]2s ² 2p ²		7 N Nitrogen [He]2s ² 2p ³		8 O Oxygen [He]2s ² 2p ⁴		9 F Fluorine [He]2s ² 2p ⁵		10 Ne Neon [He]2s ² 2p ⁶			
11 Na Sodium [Ne]3s ¹		12 Mg Magnesium [Ne]3s ²																				13 Al Aluminum [Ne]3s ² 3p ¹		14 Si Silicon [Ne]3s ² 3p ²		15 P Phosphorus [Ne]3s ² 3p ³		16 S Sulfur [Ne]3s ² 3p ⁴		17 Cl Chlorine [Ne]3s ² 3p ⁵		18 Ar Argon [Ne]3s ² 3p ⁶			
19 K Potassium [Ar]4s ¹		20 Ca Calcium [Ar]4s ²		21 Sc Scandium [Ar]3d ¹ 4s ²		22 Ti Titanium [Ar]3d ² 4s ²		23 V Vanadium [Ar]3d ³ 4s ²		24 Cr Chromium [Ar]3d ⁵ 4s ¹		25 Mn Manganese [Ar]3d ⁵ 4s ²		26 Fe Iron [Ar]3d ⁶ 4s ²		27 Co Cobalt [Ar]3d ⁷ 4s ²		28 Ni Nickel [Ar]3d ⁸ 4s ²		29 Cu Copper [Ar]3d ¹⁰ 4s ¹		30 Zn Zinc [Ar]3d ¹⁰ 4s ²		31 Ga Gallium [Ar]3d ¹⁰ 4s ² 4p ¹		32 Ge Germanium [Ar]3d ¹⁰ 4s ² 4p ²		33 As Arsenic [Ar]3d ¹⁰ 4s ² 4p ³		34 Se Selenium [Ar]3d ¹⁰ 4s ² 4p ⁴		35 Br Bromine [Ar]3d ¹⁰ 4s ² 4p ⁵		36 Kr Krypton [Ar]3d ¹⁰ 4s ² 4p ⁶	
37 Rb Rubidium [Kr]5s ¹		38 Sr Strontium [Kr]5s ²		39 Y Yttrium [Kr]4d ¹ 5s ²		40 Zr Zirconium [Kr]4d ² 5s ²		41 Nb Niobium [Kr]4d ⁴ 5s ¹		42 Mo Molybdenum [Kr]4d ⁵ 5s ¹		43 Tc Technetium [Kr]4d ⁵ 5s ²		44 Ru Ruthenium [Kr]4d ⁷ 5s ¹		45 Rh Rhodium [Kr]4d ⁸ 5s ¹		46 Pd Palladium [Kr]4d ¹⁰		47 Ag Silver [Kr]4d ¹⁰ 5s ¹		48 Cd Cadmium [Kr]4d ¹⁰ 5s ²		49 In Indium [Kr]4d ¹⁰ 5s ² 5p ¹		50 Sn Tin [Kr]4d ¹⁰ 5s ² 5p ²		51 Sb Antimony [Kr]4d ¹⁰ 5s ² 5p ³		52 Te Tellurium [Kr]4d ¹⁰ 5s ² 5p ⁴		53 I Iodine [Kr]4d ¹⁰ 5s ² 5p ⁵		54 Xe Xenon [Kr]4d ¹⁰ 5s ² 5p ⁶	
55 Cs Cesium [Xe]6s ¹		56 Ba Barium [Xe]6s ²		* 		72 Hf Hafnium [Xe]4f ¹⁴ 5d ² 6s ²		73 Ta Tantalum [Xe]4f ¹⁴ 5d ³ 6s ²		74 W Tungsten [Xe]4f ¹⁴ 5d ⁴ 6s ²		75 Re Rhenium [Xe]4f ¹⁴ 5d ⁵ 6s ²		76 Os Osmium [Xe]4f ¹⁴ 5d ⁶ 6s ²		77 Ir Iridium [Xe]4f ¹⁴ 5d ⁷ 6s ²		78 Pt Platinum [Xe]4f ¹⁴ 5d ⁹ 6s ¹		79 Au Gold [Xe]4f ¹⁴ 5d ¹⁰ 6s ¹		80 Hg Mercury [Xe]4f ¹⁴ 5d ¹⁰ 6s ²		81 Tl Thallium [Xe]4f ¹⁴ 5d ¹⁰ 6s ² 6p ¹		82 Pb Lead [Xe]4f ¹⁴ 5d ¹⁰ 6s ² 6p ²		83 Bi Bismuth [Xe]4f ¹⁴ 5d ¹⁰ 6s ² 6p ³		84 Po Polonium [Xe]4f ¹⁴ 5d ¹⁰ 6s ² 6p ⁴		85 At Astatine [Xe]4f ¹⁴ 5d ¹⁰ 6s ² 6p ⁵		86 Rn Radon [Xe]4f ¹⁴ 5d ¹⁰ 6s ² 6p ⁶	
87 Fr Francium [Rn]7s ¹		88 Ra Radium [Rn]7s ²		** 		104 Rf Rutherfordium [Rn]5f ¹⁴ 6d ² 7s ²		105 Db Dubnium [Rn]5f ¹⁴ 6d ³ 7s ²		106 Sg Seaborgium [Rn]5f ¹⁴ 6d ⁴ 7s ²		107 Bh Bohrium [Rn]5f ¹⁴ 6d ⁵ 7s ²		108 Hs Hassium [Rn]5f ¹⁴ 6d ⁶ 7s ²		109 Mt Meitnerium [Rn]5f ¹⁴ 6d ⁷ 7s ²		110 Ds Darmstadtium [Rn]5f ¹⁴ 6d ⁸ 7s ²		111 Rg Roentgenium [Rn]5f ¹⁴ 6d ⁹ 7s ²		112 Cn Copernicium [Rn]5f ¹⁴ 6d ¹⁰ 7s ²		113 Nh Nihonium [Rn]5f ¹⁴ 6d ¹⁰ 7s ² 7p ¹		114 Fl Flerovium [Rn]5f ¹⁴ 6d ¹⁰ 7s ² 7p ²		115 Mc Moscovium [Rn]5f ¹⁴ 6d ¹⁰ 7s ² 7p ³		116 Lv Livermorium [Rn]5f ¹⁴ 6d ¹⁰ 7s ² 7p ⁴		117 Ts Tennessine [Rn]5f ¹⁴ 6d ¹⁰ 7s ² 7p ⁵		118 Og Oganesson [Rn]5f ¹⁴ 6d ¹⁰ 7s ² 7p ⁶	
		* 		57 La Lanthanum [Xe]5d ¹ 6s ²		58 Ce Cerium [Xe]5d ¹ 6s ²		59 Pr Praseodymium [Xe]5d ¹ 6s ²		60 Nd Neodymium [Xe]5d ¹ 6s ²		61 Pm Promethium [Xe]5d ¹ 6s ²		62 Sm Samarium [Xe]5d ¹ 6s ²		63 Eu Europium [Xe]5d ¹ 6s ²		64 Gd Gadolinium [Xe]5d ¹ 6s ²		65 Tb Terbium [Xe]5d ¹ 6s ²		66 Dy Dysprosium [Xe]5d ¹ 6s ²		67 Ho Holmium [Xe]5d ¹ 6s ²		68 Er Erbium [Xe]5d ¹ 6s ²		69 Tm Thulium [Xe]5d ¹ 6s ²		70 Yb Ytterbium [Xe]5d ¹ 6s ²		71 Lu Lutetium [Xe]5d ¹ 6s ²			
		** 		89 Ac Actinium [Rn]6d ¹ 7s ²		90 Th Thorium [Rn]6d ² 7s ²		91 Pa Protactinium [Rn]6d ¹ 7s ²		92 U Uranium [Rn]6d ³ 7s ²		93 Np Neptunium [Rn]6d ³ 7s ²		94 Pu Plutonium [Rn]6d ³ 7s ²		95 Am Americium [Rn]6d ³ 7s ²		96 Cm Curium [Rn]6d ³ 7s ²		97 Bk Berkelium [Rn]6d ³ 7s ²		98 Cf Californium [Rn]6d ³ 7s ²		99 Es Einsteinium [Rn]6d ³ 7s ²		100 Fm Fermium [Rn]6d ³ 7s ²		101 Md Mendelevium [Rn]6d ³ 7s ²		102 No Nobelium [Rn]6d ³ 7s ²		103 Lr Lawrencium [Rn]6d ³ 7s ²			