

# 28 Ni

58.71

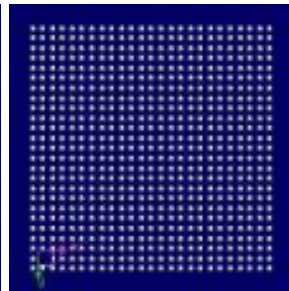
## Nickel



Density =  $8.9 \text{ g/cm}^3$   
Melting point =  $1453^\circ\text{C}$   
Boiling point =  $2732^\circ\text{C}$   
Electronegativity = 1.8  
Ionization energy =  $736.7 \text{ kJ/mol}$

Electron shell:  $[\text{Ar}] 3d^8 4s^2$   
Oxidation states: +2, +3, +4  
Abundance on Earth: 0.019%  
Isotopes:  $^{58}\text{Ni}$ ,  $^{60}\text{Ni}$ ,  $^{61}\text{Ni}$ ,  $^{62}\text{Ni}$ ,  $^{64}\text{Ni}$ , +5 unstable  
Cost: ~ \$6.22 per lb.

Crystal structure: cubic face centered; space group:  $\text{Fm}\bar{3}\text{m}$



- Nickel was discovered in 1751, by Alex Constedt.
- The name came from the Germans: Nickel (*Satan*)
- Properties: silvery white, high polished look. Fair conductor of heat and electricity.
- Availability: as a free element foil, powder, flakes, sheet, wire, mesh, spheres, "evaporation slugs", and rods.
- Uses: used as an ingredient of steel and other metal products.
- Common Compounds:  $\text{NiO}$ ,  $\text{Ni}_2\text{O}_3$ ,  $\text{NiI}_2$ ,  $\text{Ni}_3\text{S}_2$ ,  $\text{NiS}$ ,  $\text{NiS}_2$
- Health Effects
  - Sickness and dizziness after exposure to nickel gas
  - Respiratory failure
  - Birth defects
  - Heart disorders