Chemical Bonding  
Ivy Way Science

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| Type of Bond | What happens to valence electrons? | Where are these elements in the Periodic Table? | Physical Properties | Nicknames |
| Ionic | electrons are transferred. atoms arranged into crystals. | one metal and one non-metal | high melting point. high boiling point. hard and brittle.  conducts electricity in liquid phase (dissolved or melted) | salt |
| Non-polar Covalent | electrons are shared between atoms | non-metals | low melting point. low boiling point. don’t conduct electricity. | molecule. molecular compound. |
| Polar covalent | electrons are shared unevenly. | non-metals of unequal electronegativity | higher m.p. and b.p. than covalent, but lower than ionic | dipoles |
| Network Solid | electrons are shared.  every atom bonds with every other atoms. | C (diamonds) SiO2 (quartz/sand) | Extremely hard. Extremely high m.p. | diamond, quartz, sand |
| Metallic | sea of mobile electrons between lattice of cations | metals (left of staircase) | good electrical and thermal conductor. high melting and boiling point.  shiny, malleable. react with acids to form H2 |  |