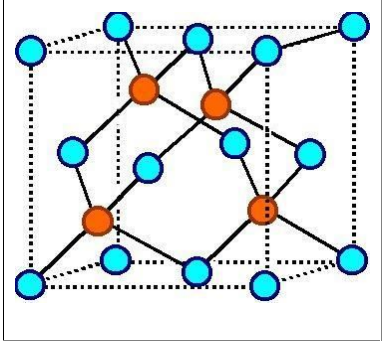
Zinc Blende and Wurtzite

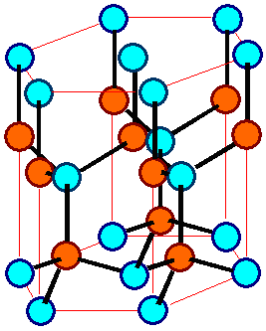
Illustration

Here are the two most important **crystal structures** for semiconductors.

- They are often referred to by the historical names "**Zinc blende**" from the German "Zinkblende" = **α-ZnS**, a rather ubiquitous mineral. The name "**Sphalerite** " also comes form the German: "Sphalerit", which, as was the custom of the time, stems from the Greek "sphaleros" meaning ***treacherous*** or malicious because it is easy to confuse it with other minerals.
- **Wurtzite** was and is the name of the **β-ZnS** modification - the hexagonal high-temperature variant. The named after the French chemist C. A. **Wurtz** (*** 1817,** † **1884**), which gives us an idea of how old those names are.



Zinc blende or sphalerite or Diamond structure



Wurtzite or hexagonal structure
Red lines are not showing bonds.

- Of course we see immediately that what many call *Zinc blende* or *sphalerite* is simply an **fcc** lattice with two atoms in the base: atom **A** at **(0,0,0,)** and atom **B** at **(½, ½, ½)**. *Wurtzite*, of course has an hexagonal lattice and ….*find it out yourselve!!!* ... atoms in the base. Check the links about lattice and base in general and hexagonal lattices in particular.
- Equally of course we notice that we have close packing, i.e. we simply have a case of **ABCABC...** stacking of the base, or a **ABAB...** stacking.
- From the viewpoint of tetrahedrally coordinated bond angles, it is simply a matter of going "cis" (⌐¬) or "trans" (⌐⌙).