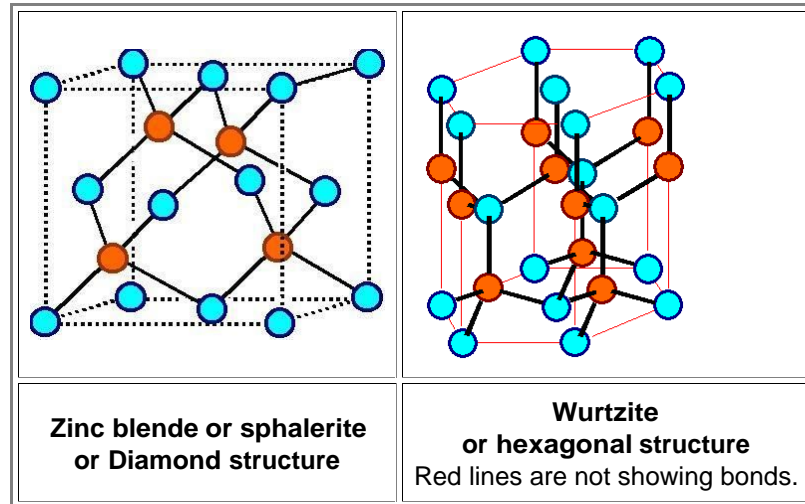


Zinc Blende and Wurtzite

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" = $\alpha\text{-ZnS}$, a rather ubiquitous mineral. The name "**Sphalerite**" also comes from 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 $\beta\text{-ZnS}$ 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.



- 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 $(\frac{1}{2}, \frac{1}{2}, \frac{1}{2})$. **Wurtzite**, of course has an **hexagonal lattice** and*find it out yourself!!!* ... 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" (\angle) or "trans" (\angle).