

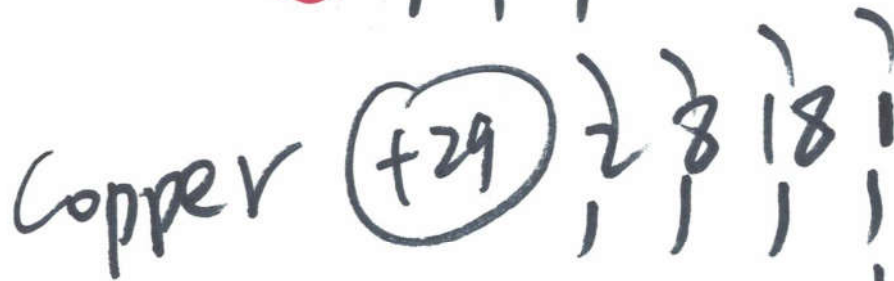
①

Intrinsic Semiconductors

① Conductor: Copper
insulator: glass

semiconductor conductivity
between conductor and
insulator

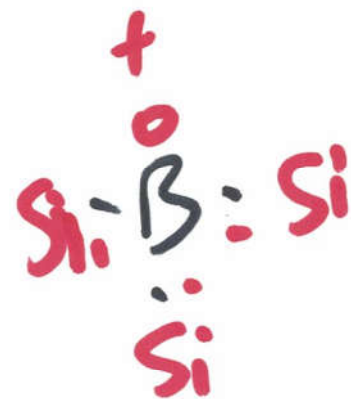
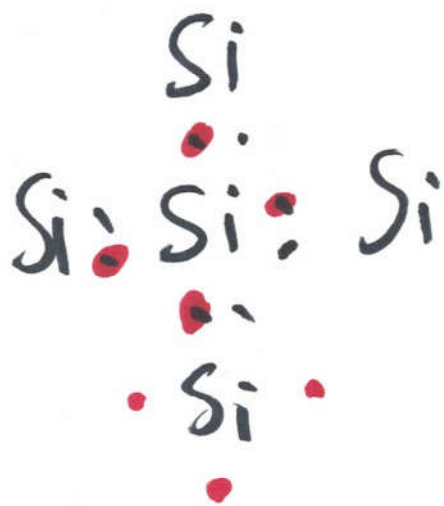
② Semiconductor:
silicon, Germanium, Gallium-Arsenide...



③ Impurities: phosphorus (+15) and Boron

$$\begin{array}{c} \text{+15} \\ \left. \begin{array}{c} \updownarrow \\ \updownarrow \\ \updownarrow \end{array} \right\} 2 \\ \left. \begin{array}{c} \updownarrow \\ \updownarrow \\ \updownarrow \\ \updownarrow \end{array} \right\} 8 \\ \updownarrow \\ \updownarrow \end{array}$$

②



③