

## 2.4.5 Summary to: 2.4: Other Semiconductors and Related Products

### Germanium (Ge) and SiC

- Germanium was almost "useless" but is experiencing some comeback now (2007) in conjunction with Si technology.
- SiC is very difficult to obtain as a good single crystal (many polytypes) but has some desirable properties for high speed or high power devices

### II-VI semiconductors are objects of heavy research but hardly used for products at present.

- The only used material is CdTe for solar cells that are actually on the market. We might see, maybe, ZnO being used for LED's in the future.

### "Chalcogenides", meaning compounds with "Chalcogens", i.e. S, Se, and Te as major elements, are often semiconductors

- Oxygen, in the same Ila group, forms "oxides"!
- The most prominent representative of chalcogenides (besides CdTe) is "CIS" (CuInSe<sub>2</sub>) or better "CIGS" (CuIn<sub>x</sub>Ga<sub>1-x</sub>Se<sub>2</sub>) used for solar cells and actually on the market.

### Organic semiconductors. A relatively recent addition to the club, organic semiconductors seem to have a bright future at least in optoelectronics

- OLED's are on the market, in particular as part of a flat panel display; the first OLED based TV screen has been announced for 2008.
- The big problem of OLED's is their sensitivity to oxygen.

### Exercise 2.4-1

Some quick questions to 2.4