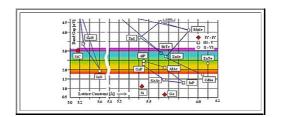
2.3.3 Summary to: 2.3. III-V Semiconductors

- III-V semiconducrors combine the group III elements AI, Ga, In) with the group V elements N, P, As, Sb; giving **12** possible combinations.
 - The most important ones are probably GaAs, InP GaP and GaN
 - Band gap energies and types vary; lattices are zincblende / sphalerite (= fcc) or wurtzite (= hex).
- Ternary and quaternary (III_xIII_{1-x}V_yV_{1-y}) compounds are relatively easy to make.
 - Properties like band gap, lattice constant, refractive index then adjustable to some extent.
 - Main materials for optoelectronic products. Some high-speed and sensor applications.
 - "Master diagram" = bandgap vs. lattice constant is of elementary importance for semiconductor technology.

Properties	Si	GaAs	InP	GaP	GaN	In _{0,53} Ga _{0,47} As
Band gap [eV]	1,12	1,42	1,35	2,26	3.39	0,75
Туре	Indirect	Direct	Direct	Indirect	Direct	Direct
Lattice	fcc	fcc	fcc	fcc	hex	fcc



Exercise 2.3-1

All Class Exercises to 2.3