

# Photoreflectance Spectroscopy

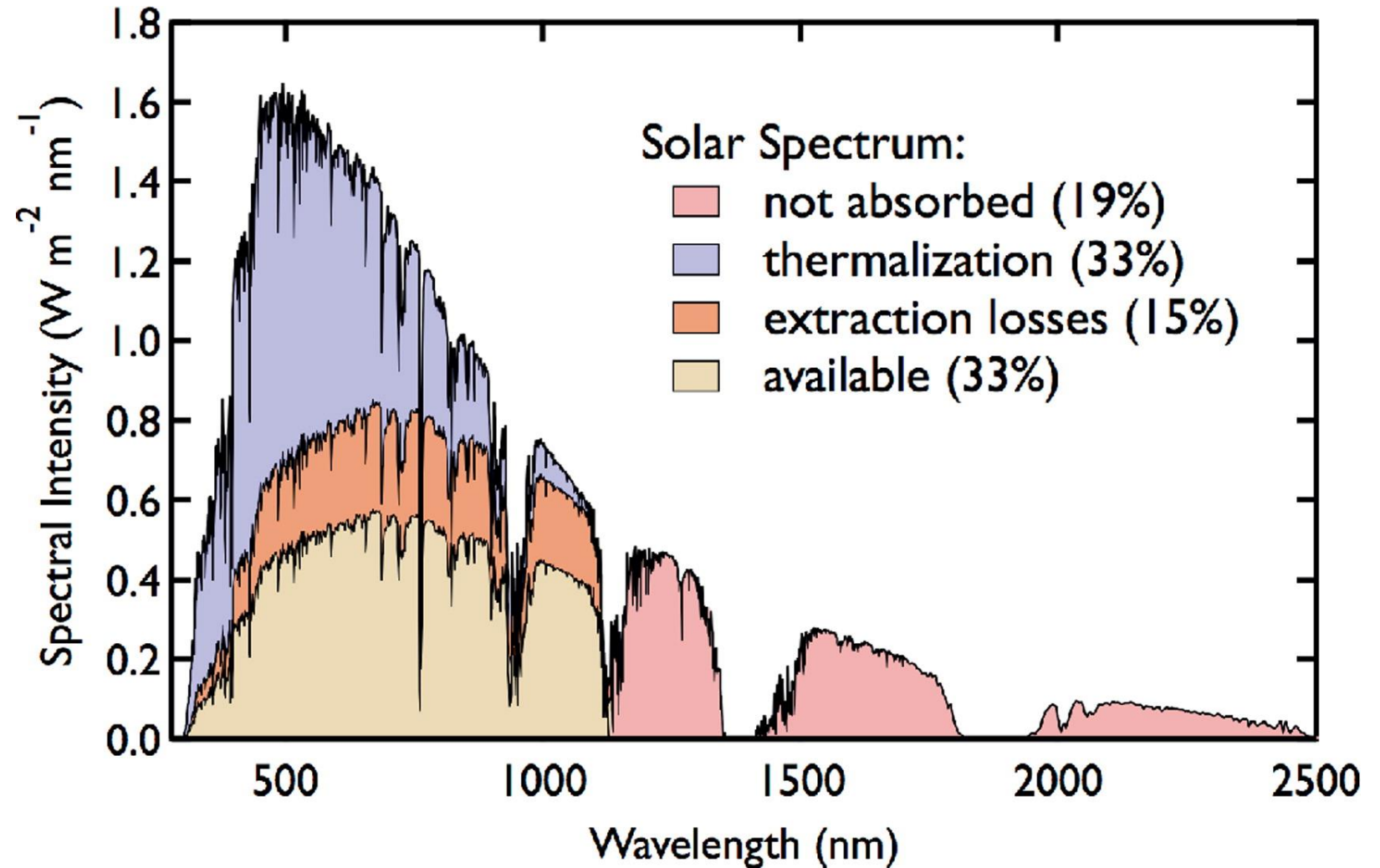
Johannes Byle

Adviser: Dr. Sellers

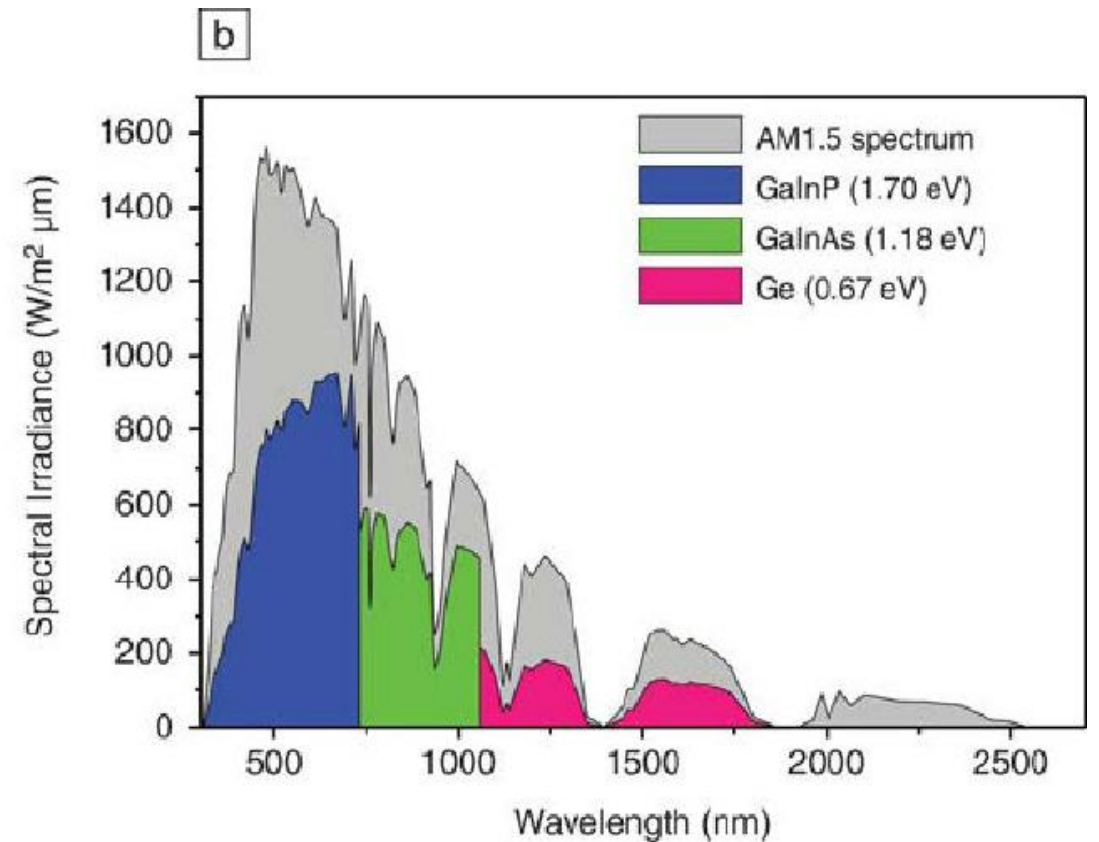
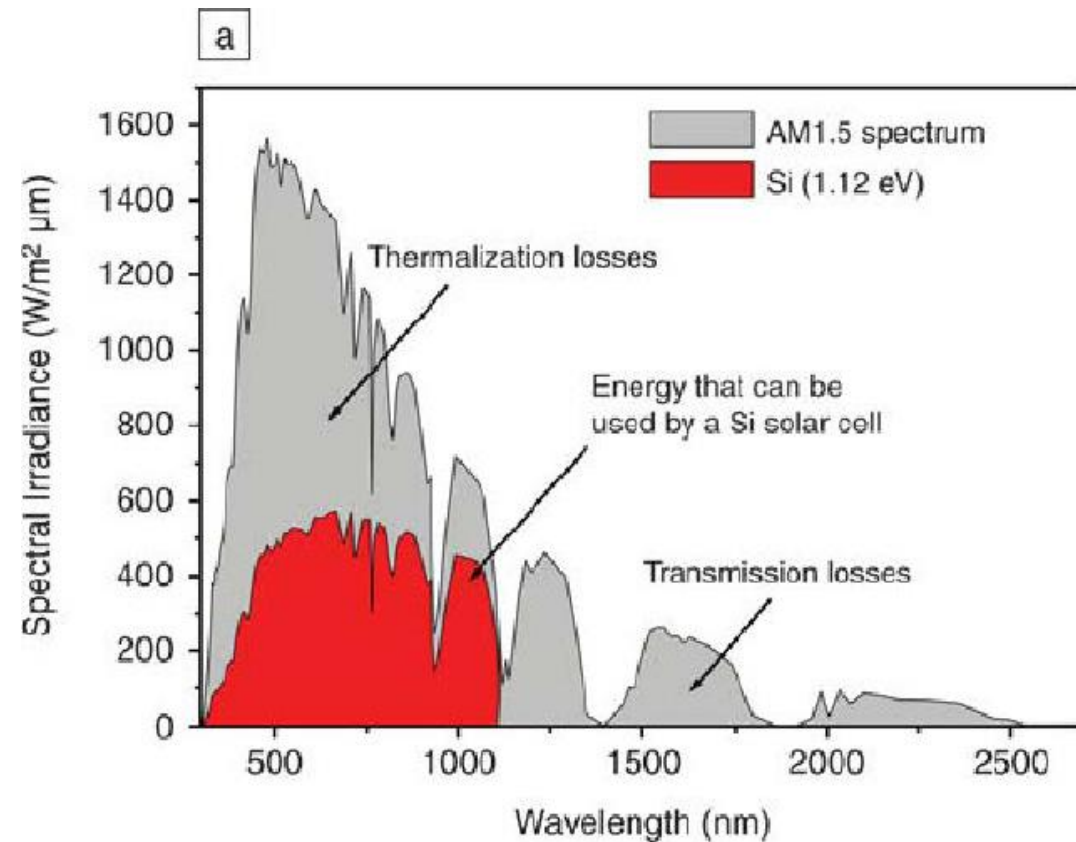
# Processes limiting solar cell efficiency

**Not absorbed:** photons with energy less than the band gap don't get absorbed at all.

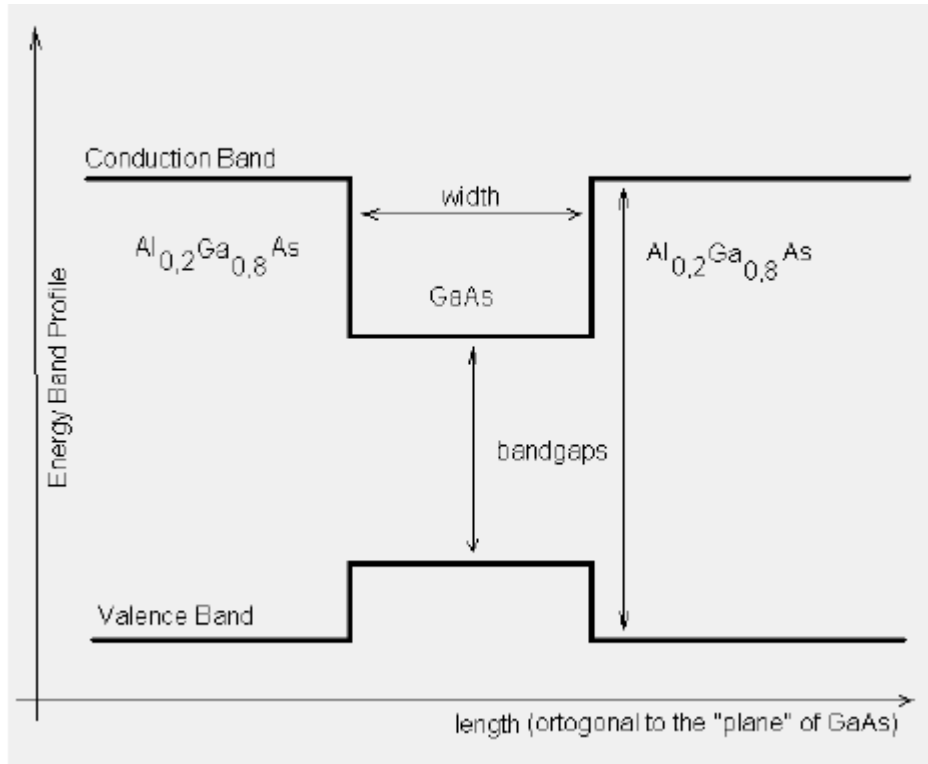
**Thermalization:** Photons with energy greater than the band gap sometimes convert their energy to heat.



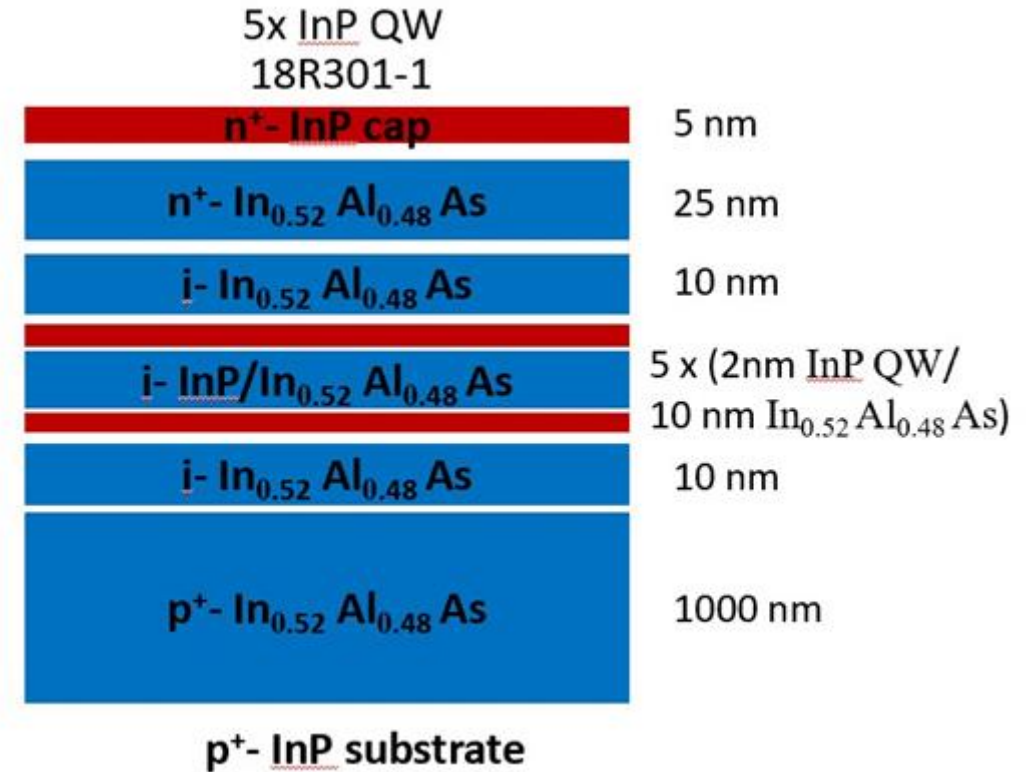
# Multijunction solar cells



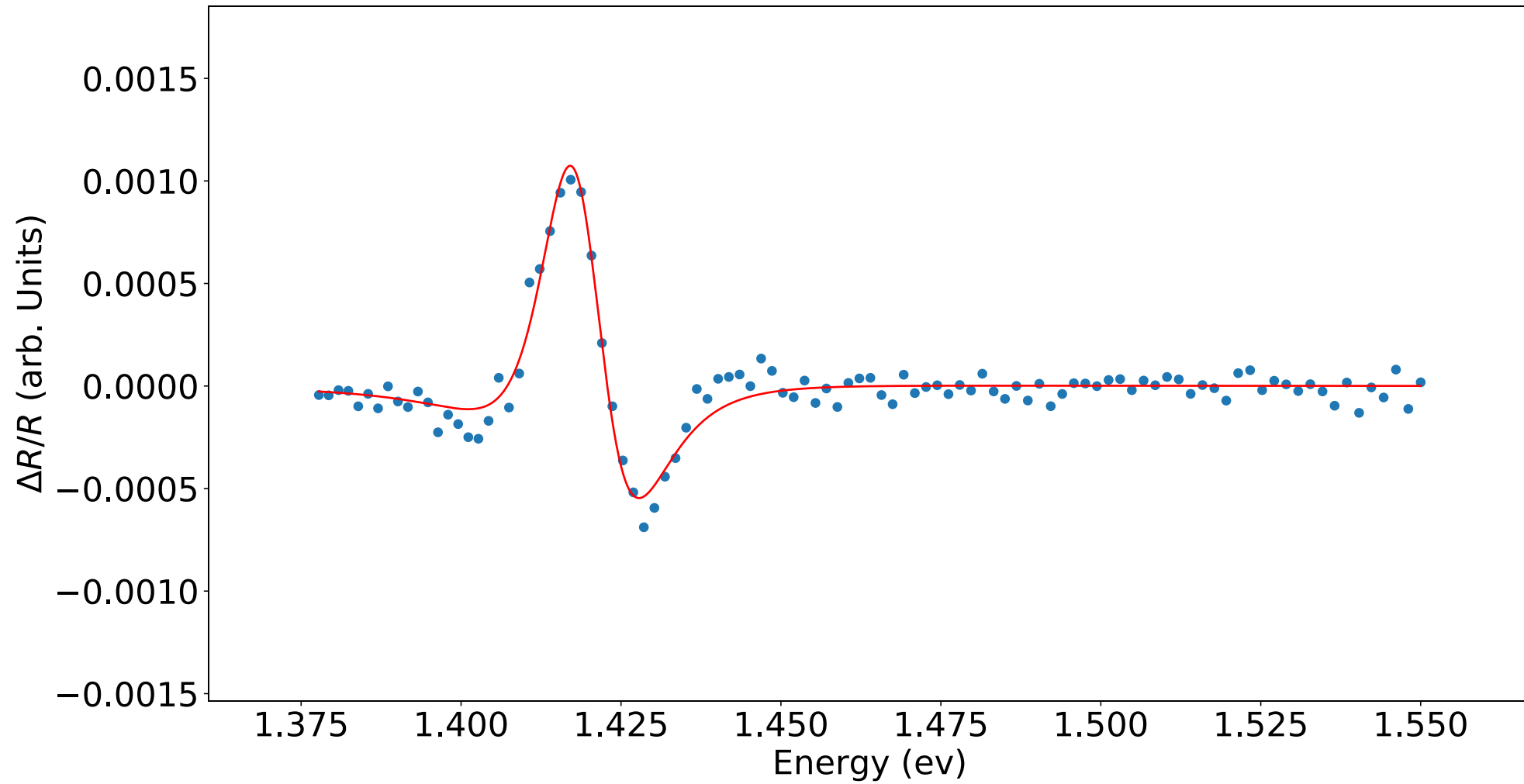
# Quantum Wells



Example of the valence band and conduction band structure of a quantum well



GaAs at 290K



# GaAs Photoreflectance Temperature Dependence

