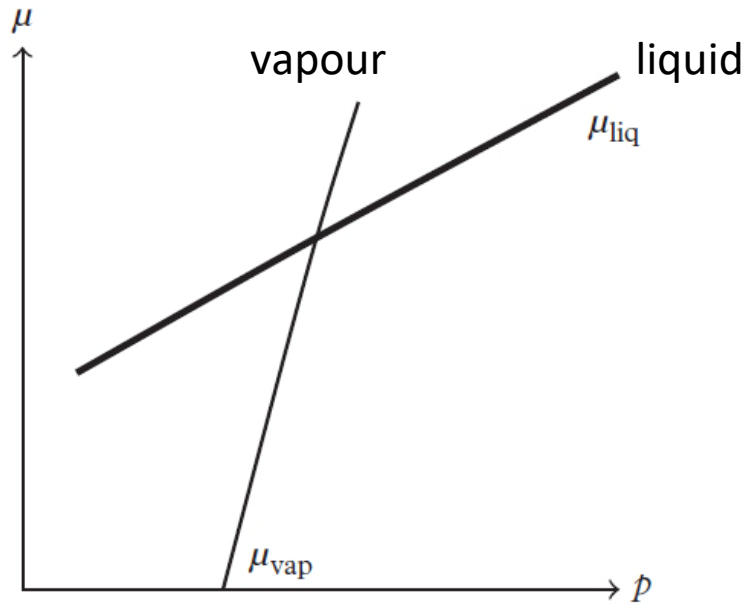
Thermodynamics lecture 13.

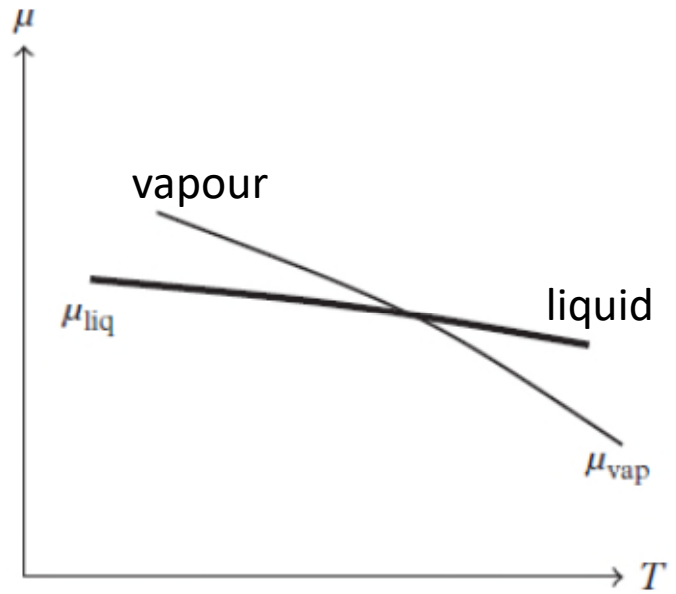
1. Some observations on chemical potential
2. Nucleation (example for supercooled vapour)
3. Radiative heat transport
4. The greenhouse effect

Chemical potential verses p at fixed T



$$\left.\frac{\partial \mu}{\partial p}\right|_T = v = \frac{1}{n}$$

Chemical potential verses T at fixed p



$$\left.\frac{\partial \mu}{\partial T}\right|_p = -s$$

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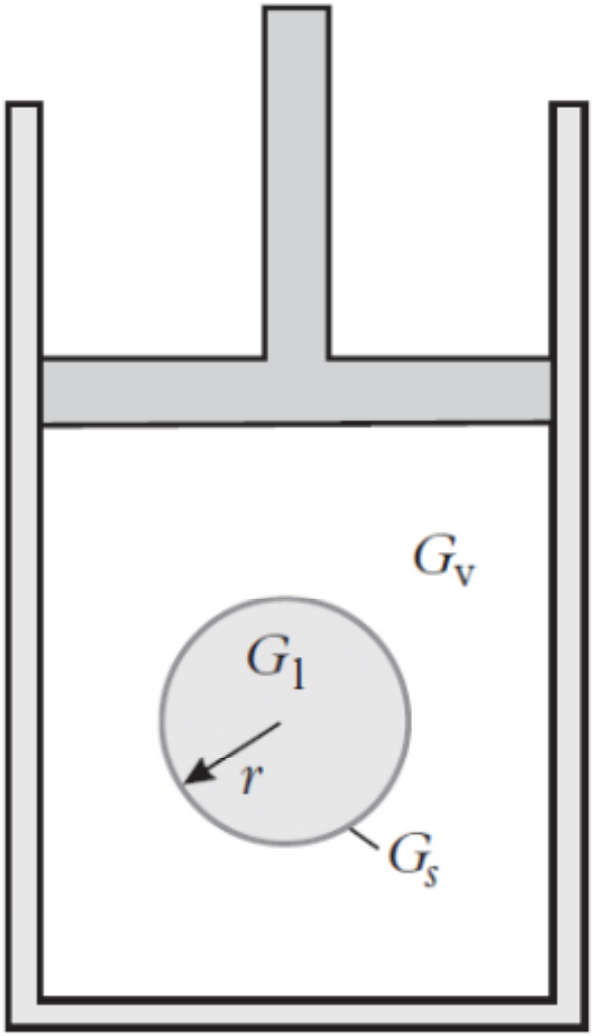
The bubbles form on the glass at particular places



A spherical drop of liquid forming inside a vapour

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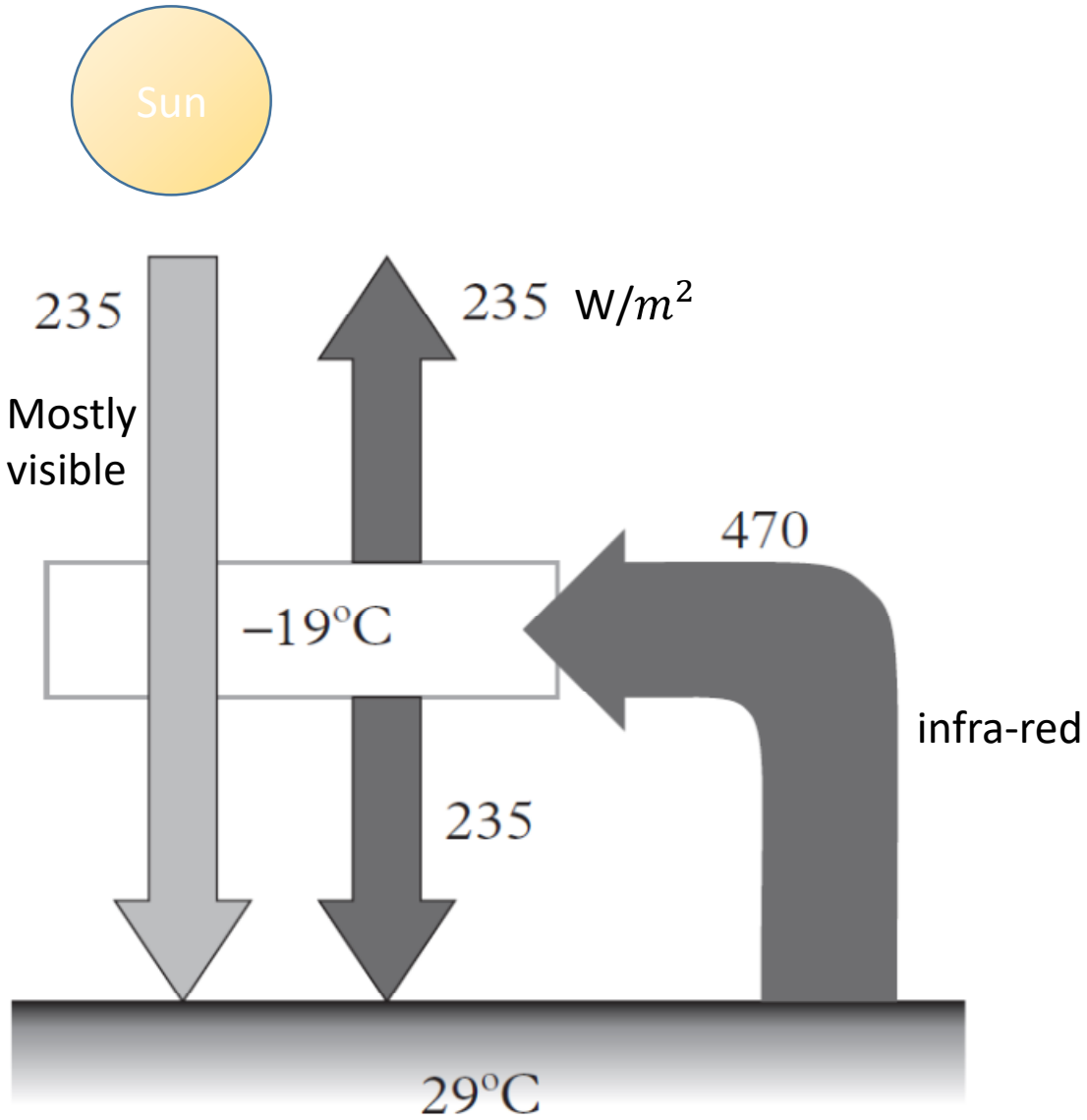
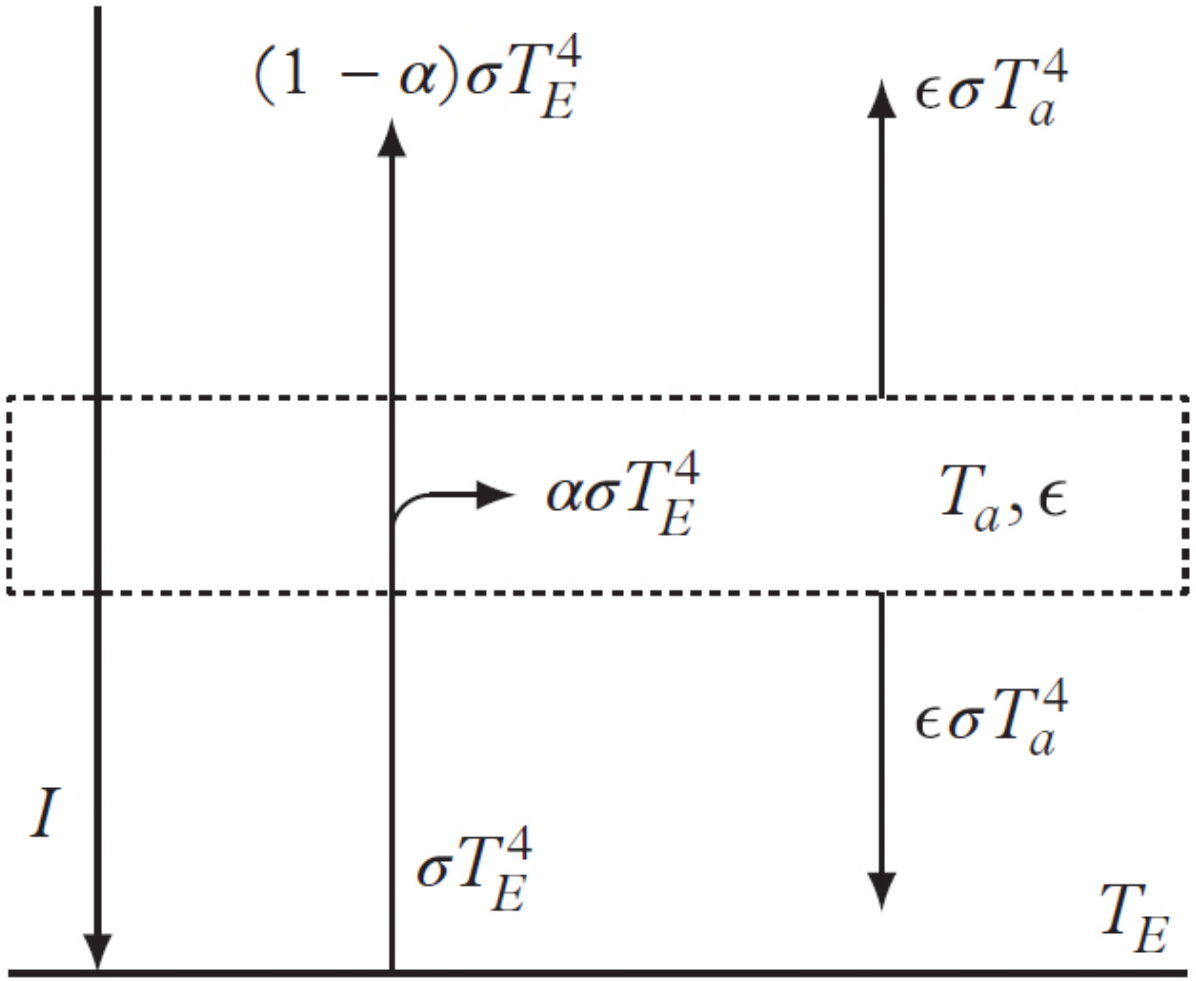
A simple model of the greenhouse effect





Slightly more complete model

→ T = 15 ^{o}C

at ε = 0.78

Carbon dioxide concentration in atmosphere vs time