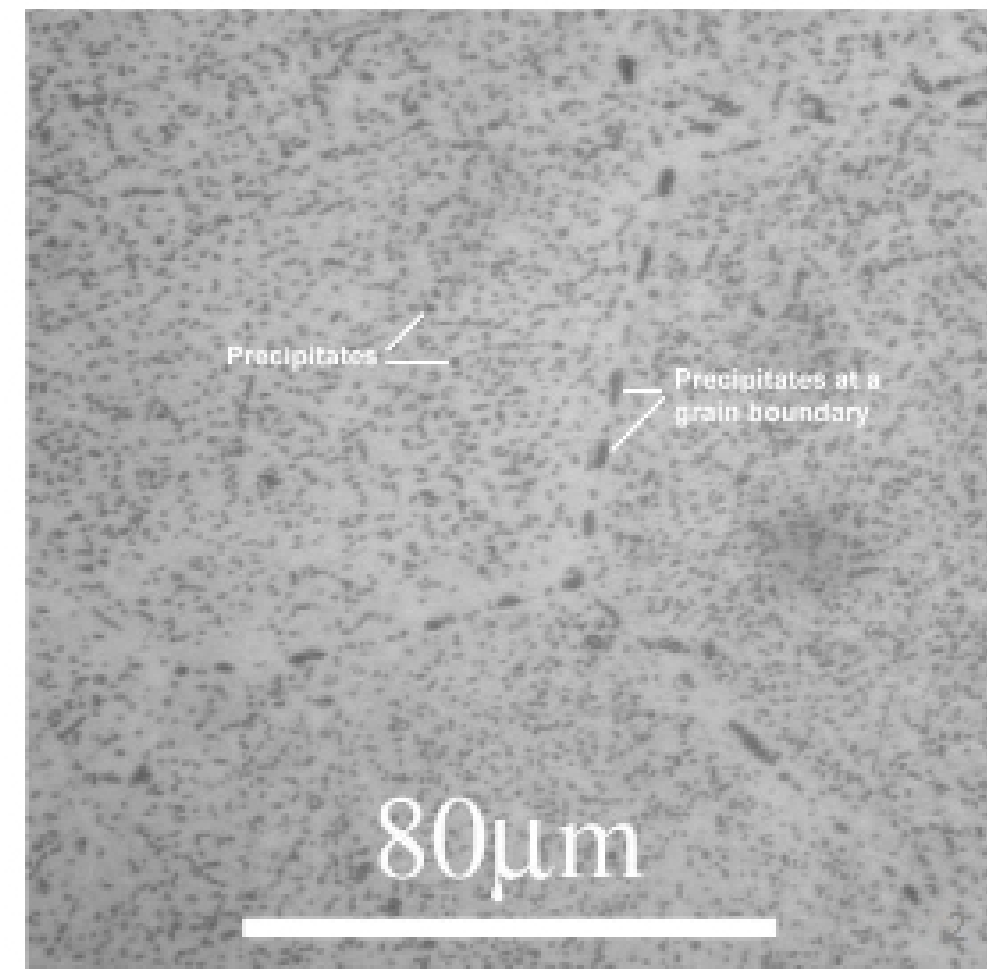
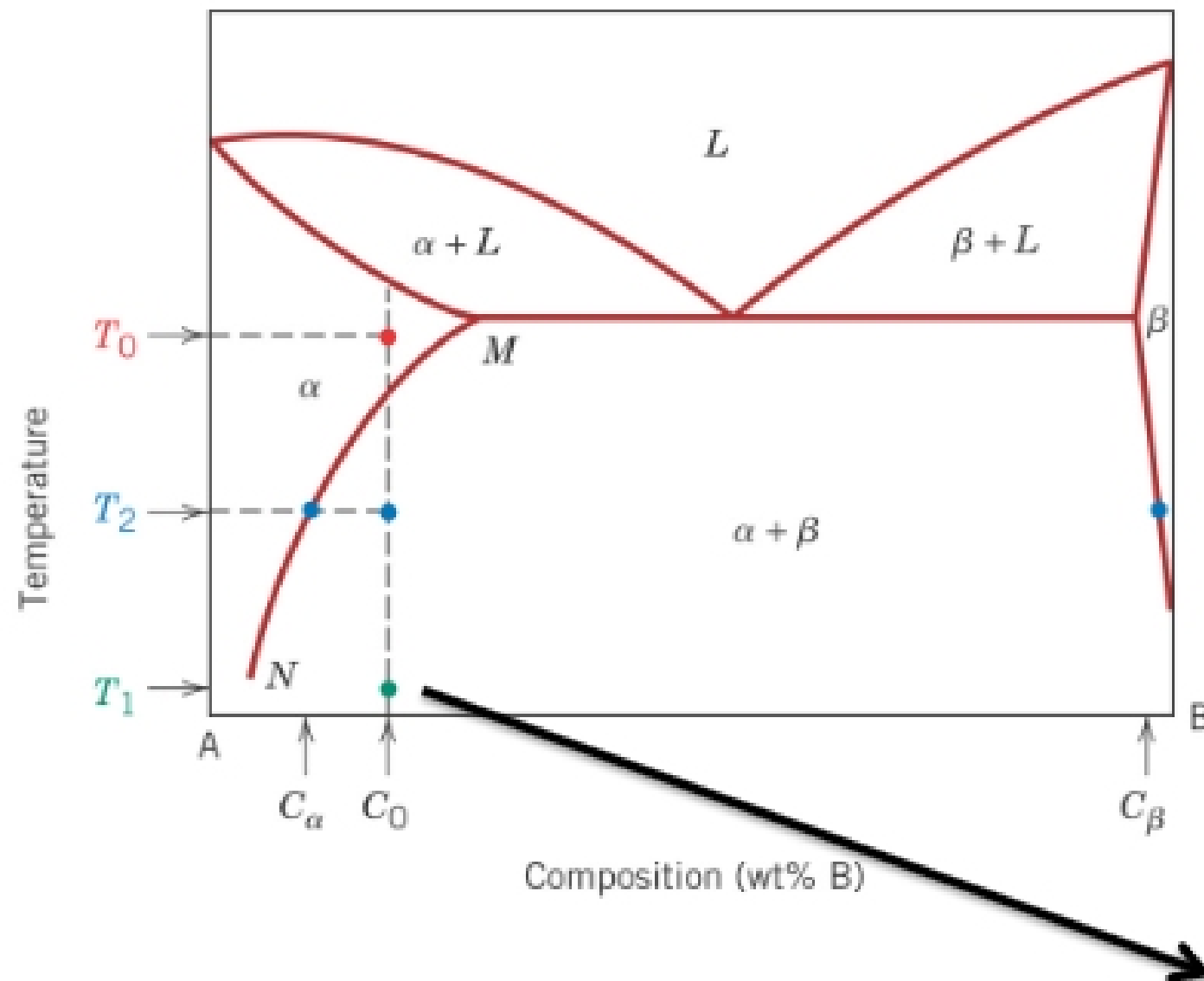


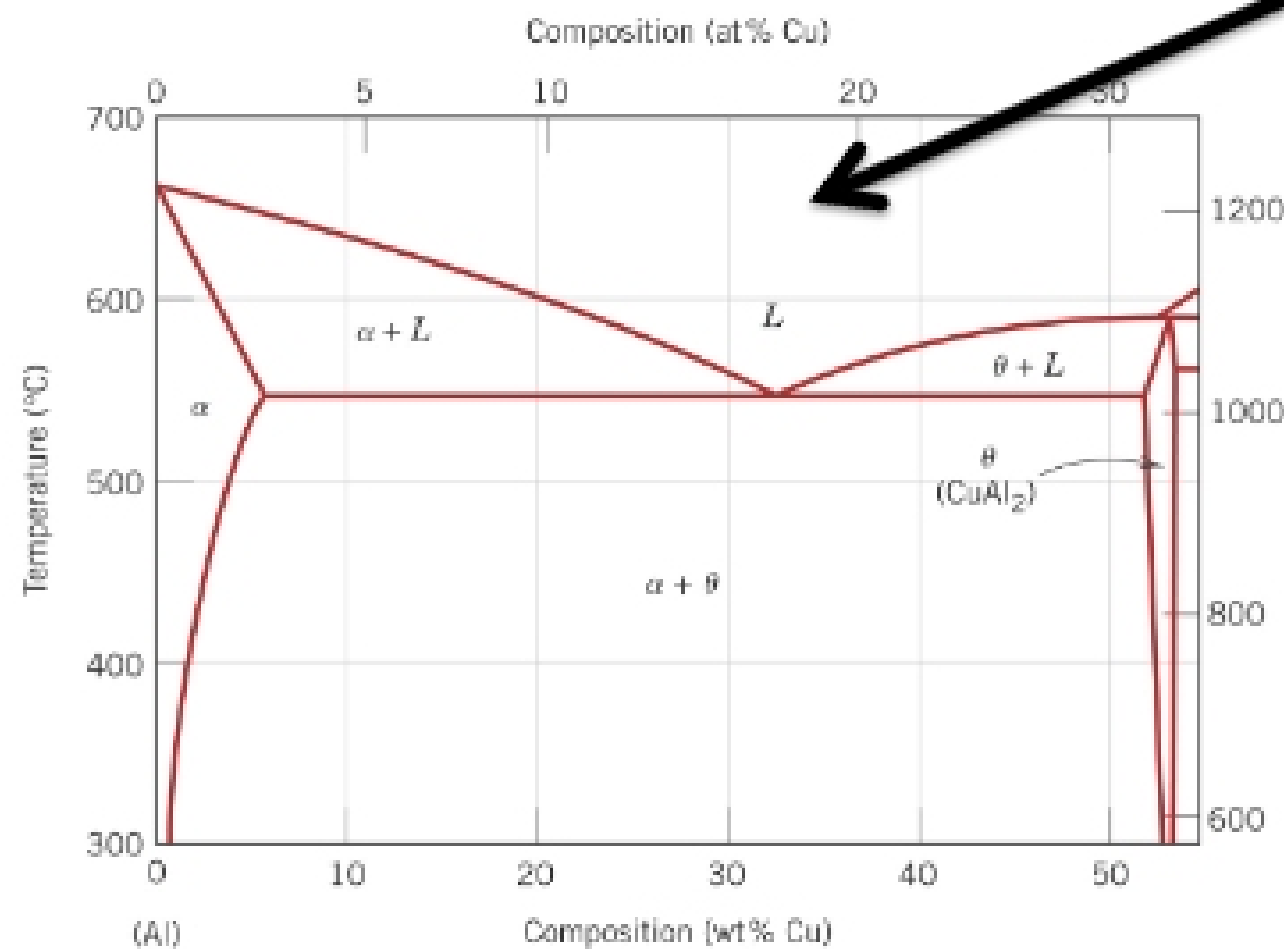
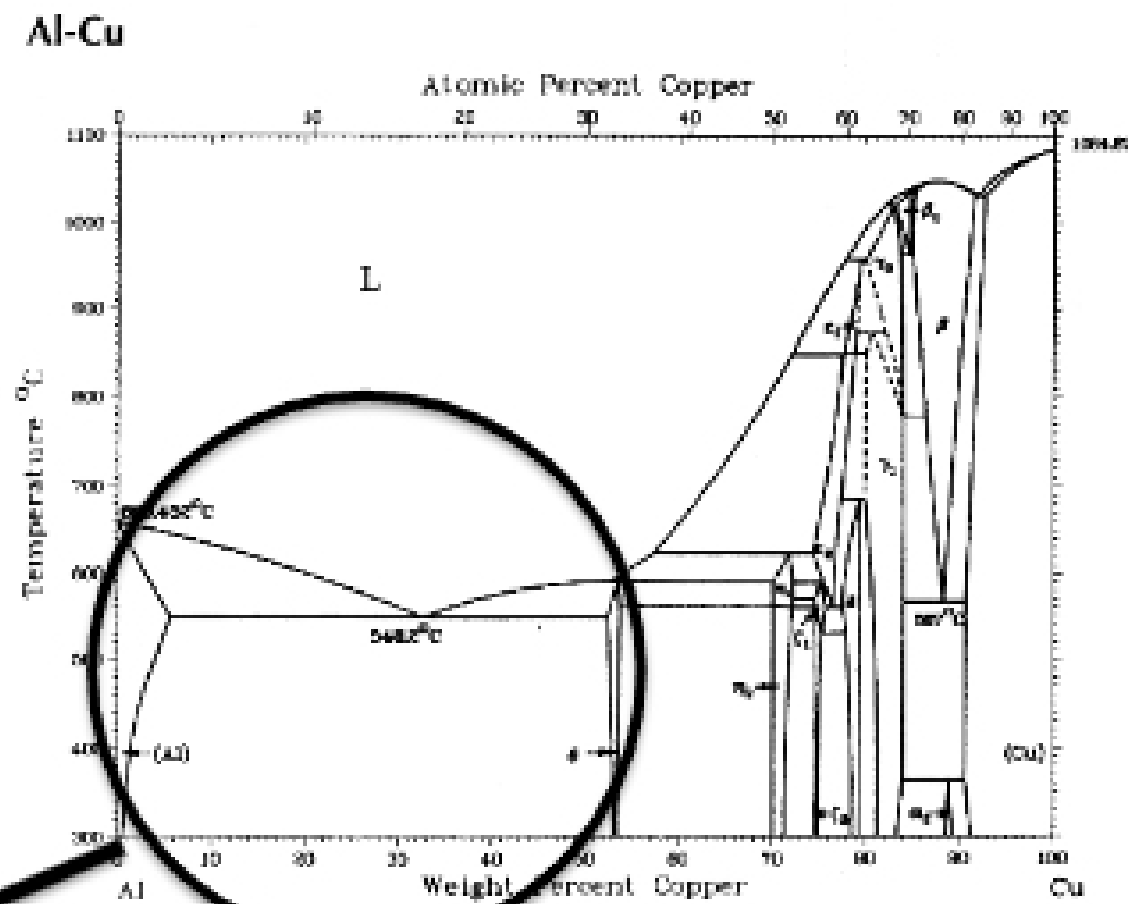
# Kinetics of Phase Transformations

- The phase diagram tells you where a system wants to go in terms of composition and microstructure, but it tells you nothing about how long it will take to get there.
- We need to learn about how rapidly phase transformations occur, because we can make microstructures and compositions not predicted by the phase diagram by a combination of heat treatments and varying cooling rates.
- We will first examine “diffusive” phase transformations that occur but the movement of atoms at elevated temperature (diffusion). Most phase transformations in materials are diffusive.

# Precipitation Strengthening



Check out the reading in Chap. 11.9 on precipitation hardening. Al-rich Al-Cu alloys are good candidates for precipitation hardening/strengthening.



The Al-rich section of the Al-Cu phase diagram