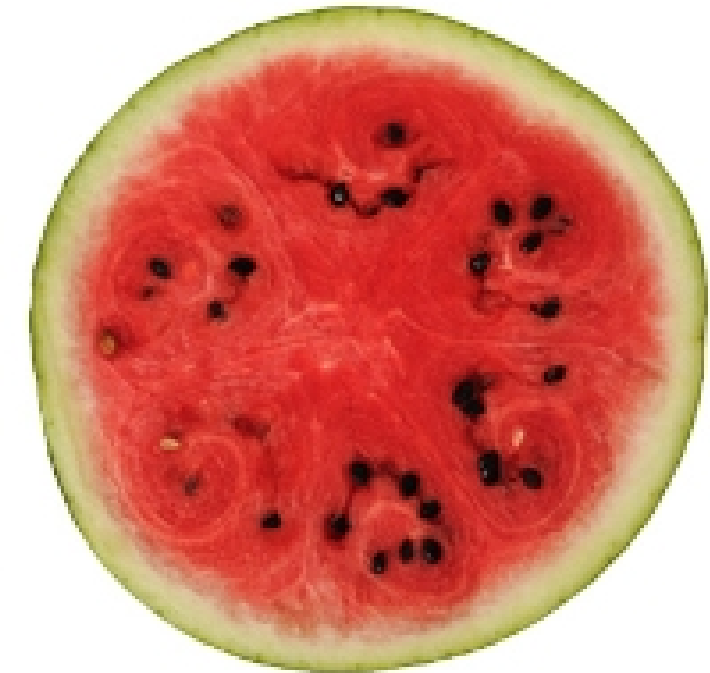


A Phase is: “a homogeneous portion of a system that has uniform physical and chemical characteristics.”

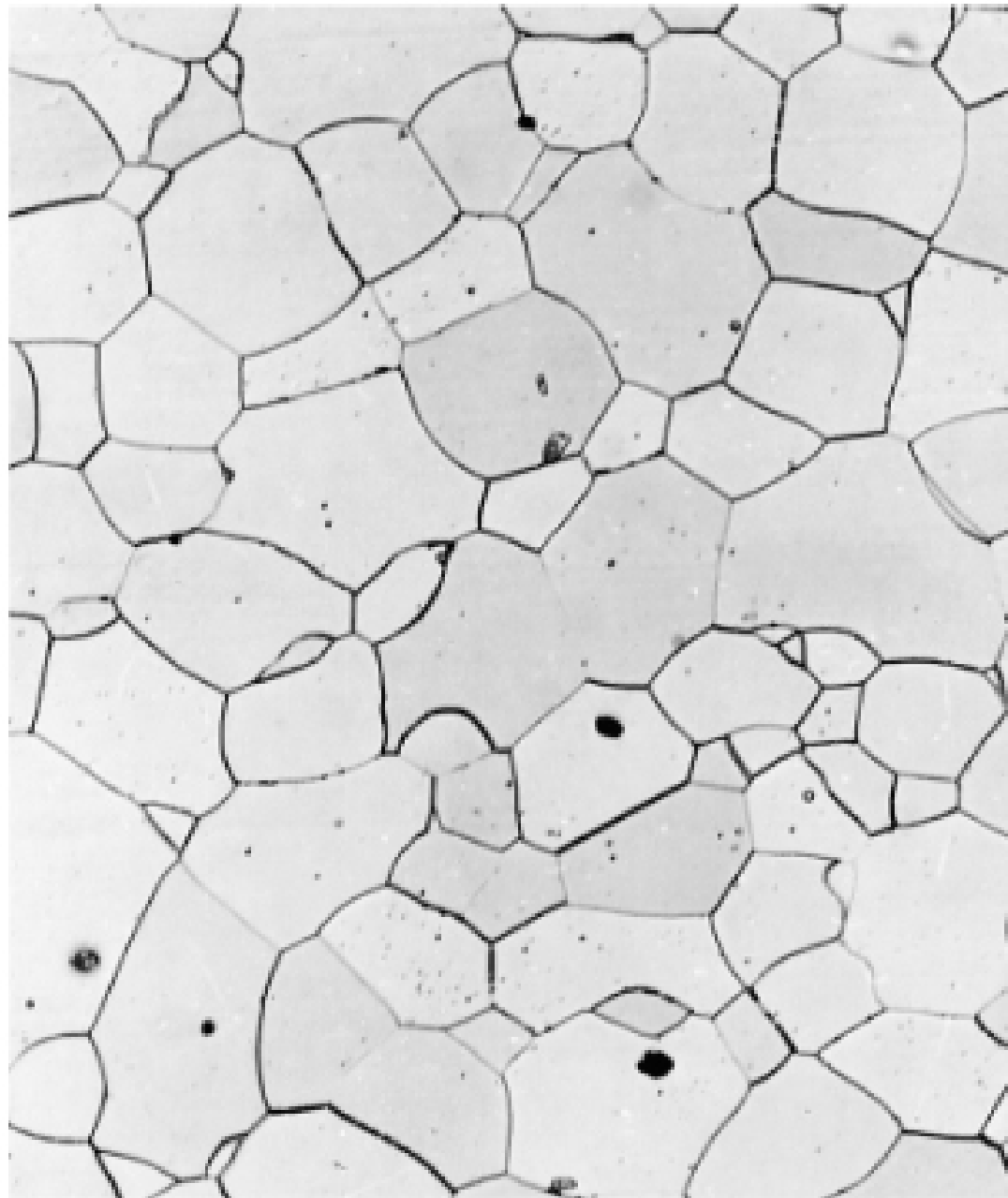
Multiple phase



Single Phase  
(pulp free)



## SINGLE PHASE

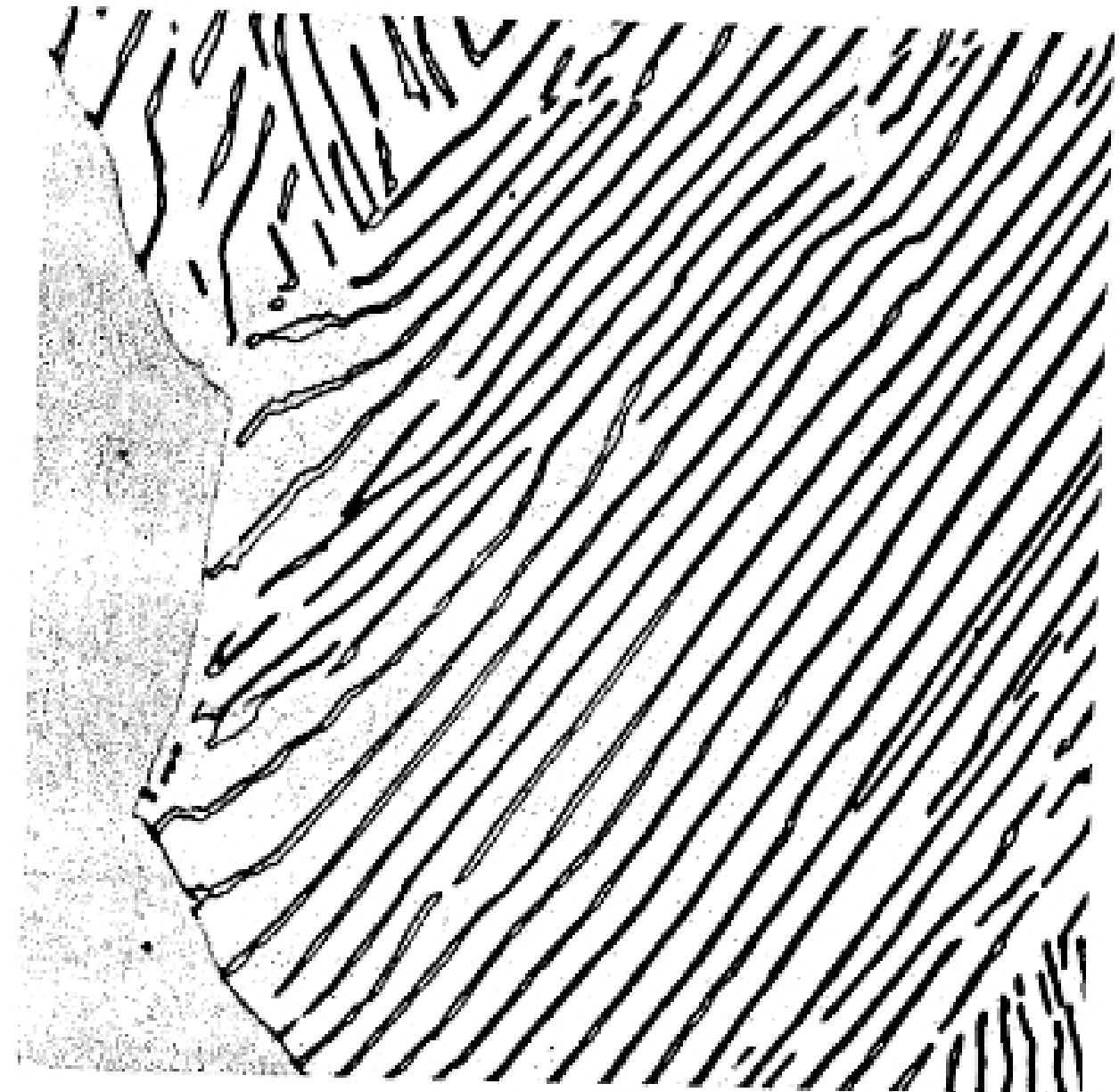


(b)

100  $\mu\text{m}$

Solid-solution alloy

## TWO PHASE



“Pearlite”, a two phase mixture of ferrite (BCC iron) and  $\text{Fe}_3\text{C}$  (iron carbide)

# Phase Identification

- X-ray Diffraction: different phases have different crystal structures and/or quite different lattice parameters. Each phase will have its own set of x-ray diffraction peaks.
- Metallography: polish and etch samples to examine microstructure using an optical or electron microscope.
- Chemical Microanalysis: using electron microprobes to determine the chemical composition of what you are viewing.