



## **EMS-162L: Structure and Characterization of Materials Laboratory**

Winter Quarter, 2004

### **Quantitative Metallography**

1. The mean intercept lengths for several microstructures are 7, 165 and 889 microns. What are the equivalent ASTM grain sizes?
2. Measure the grain size in the schematic microstructure shown in figure 1. The magnification is 250X and your target statistics are a confidence interval of  $\pm 5\%$  of the mean at a confidence level of 95%. Report the grain size and confidence interval as the mean lineal intercept and the grain diameter.
3. Measure the grain size in the schematic cold worked microstructure shown in figure 2. The magnification is 250X and your target statistics are the same as in question 2. Report the grain size and confidence interval as the mean lineal intercept and the grain diameter.
4. Measure the volume fraction of phases in the schematic cold worked microstructure shown in figure 3. The magnification is 250X and your target statistics are the same as in question 2.

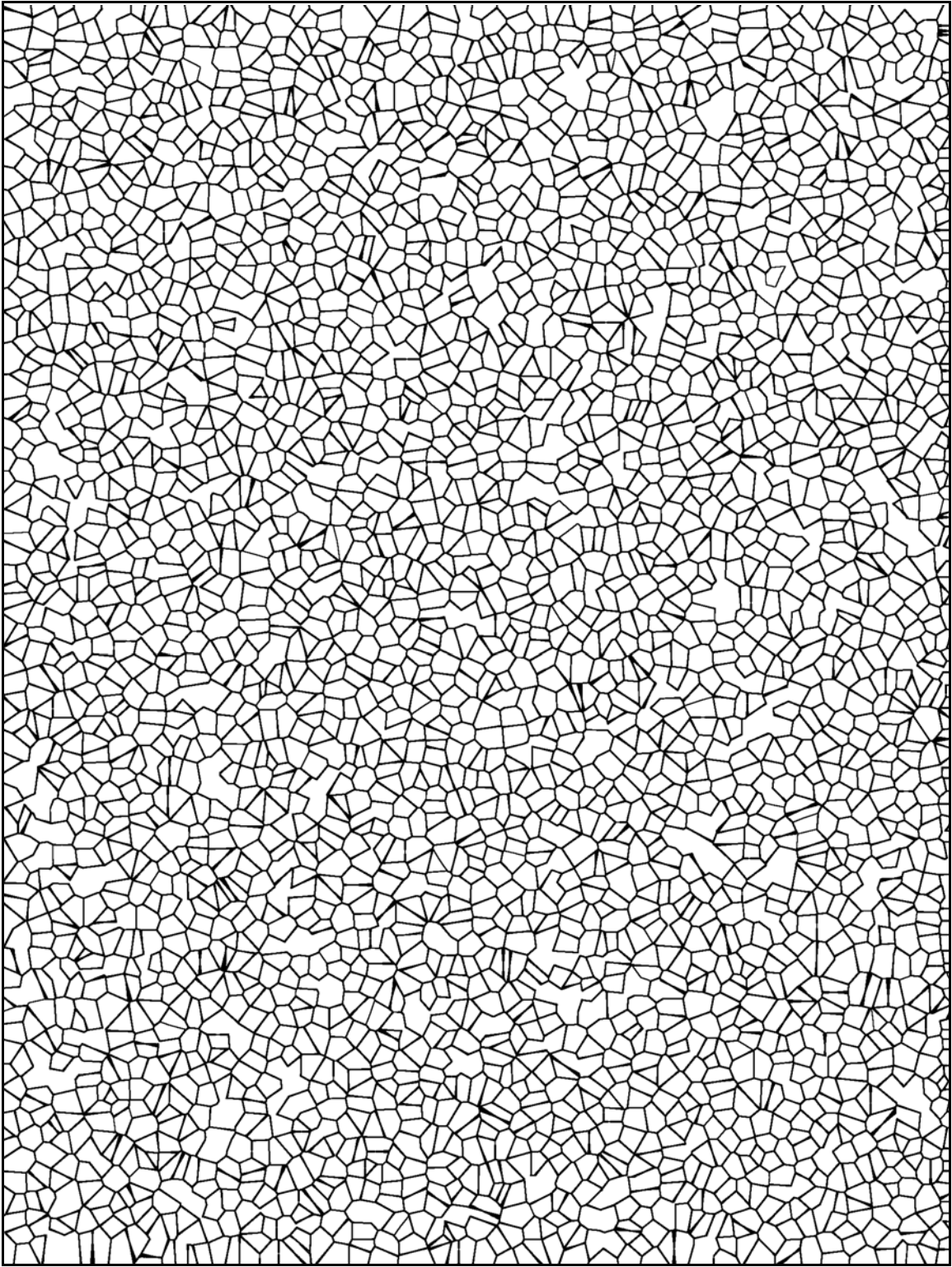


Figure 1

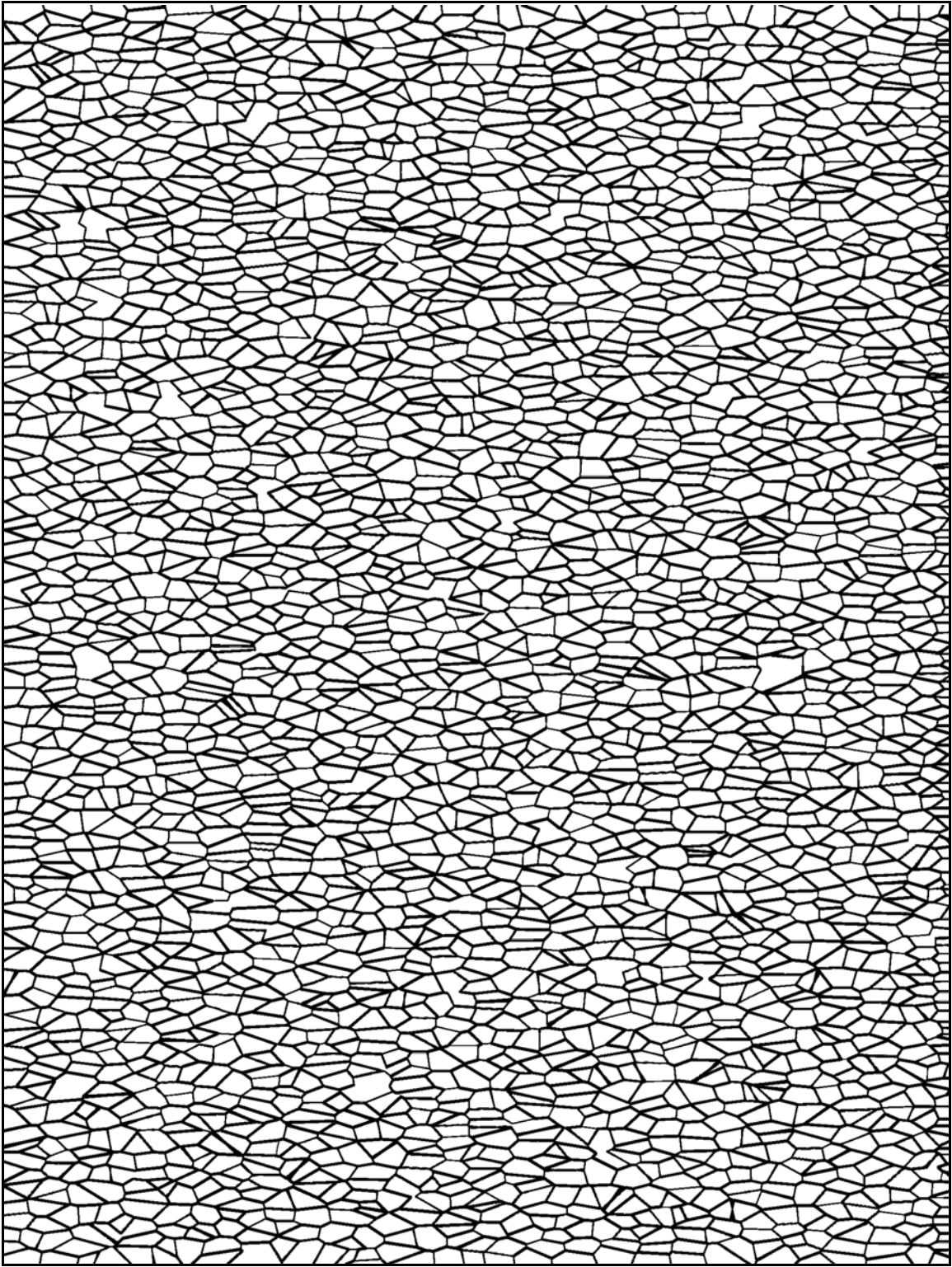


Figure 2

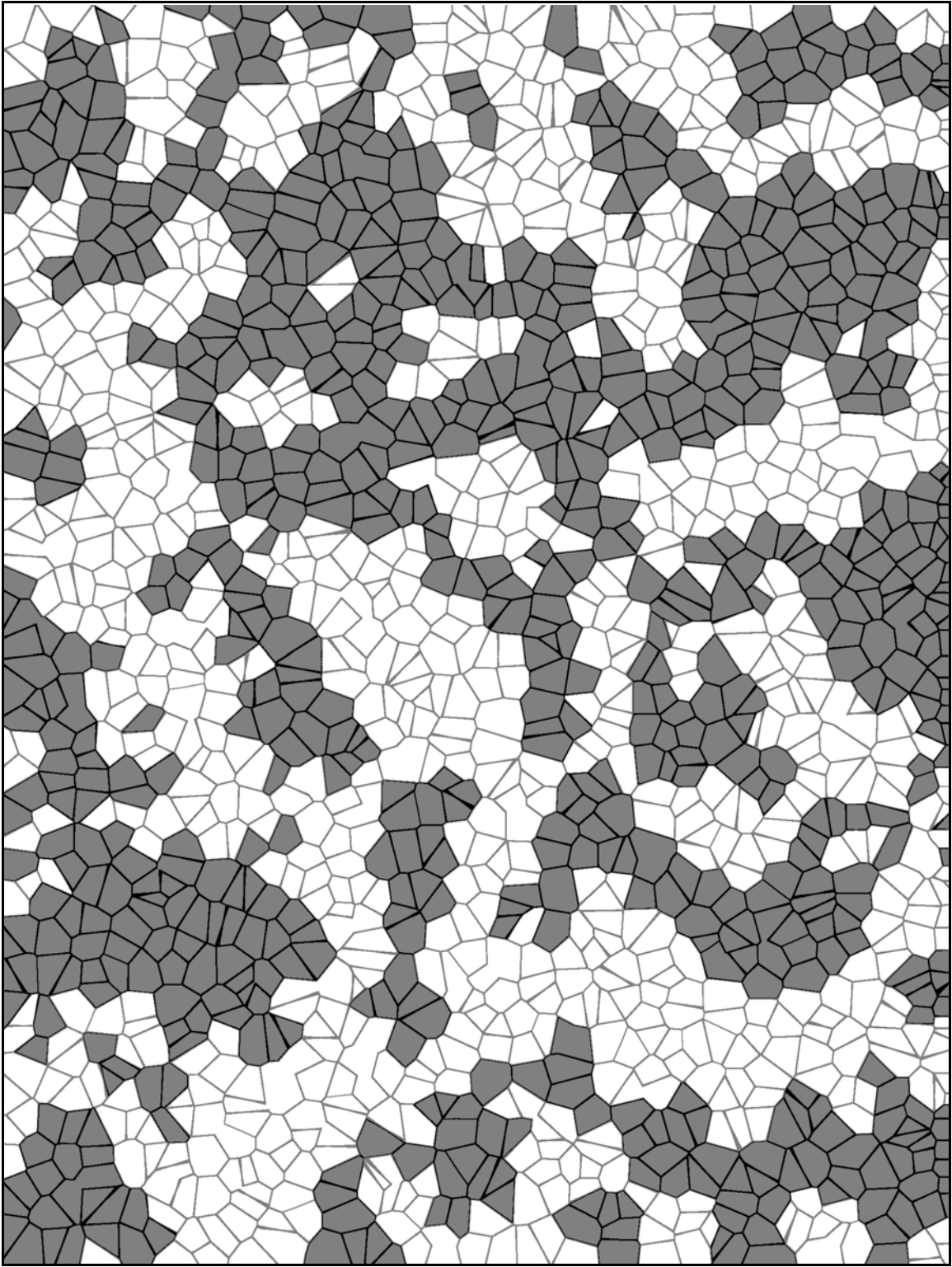


Figure 3