ESS103A Igneous Petrology   Name_____
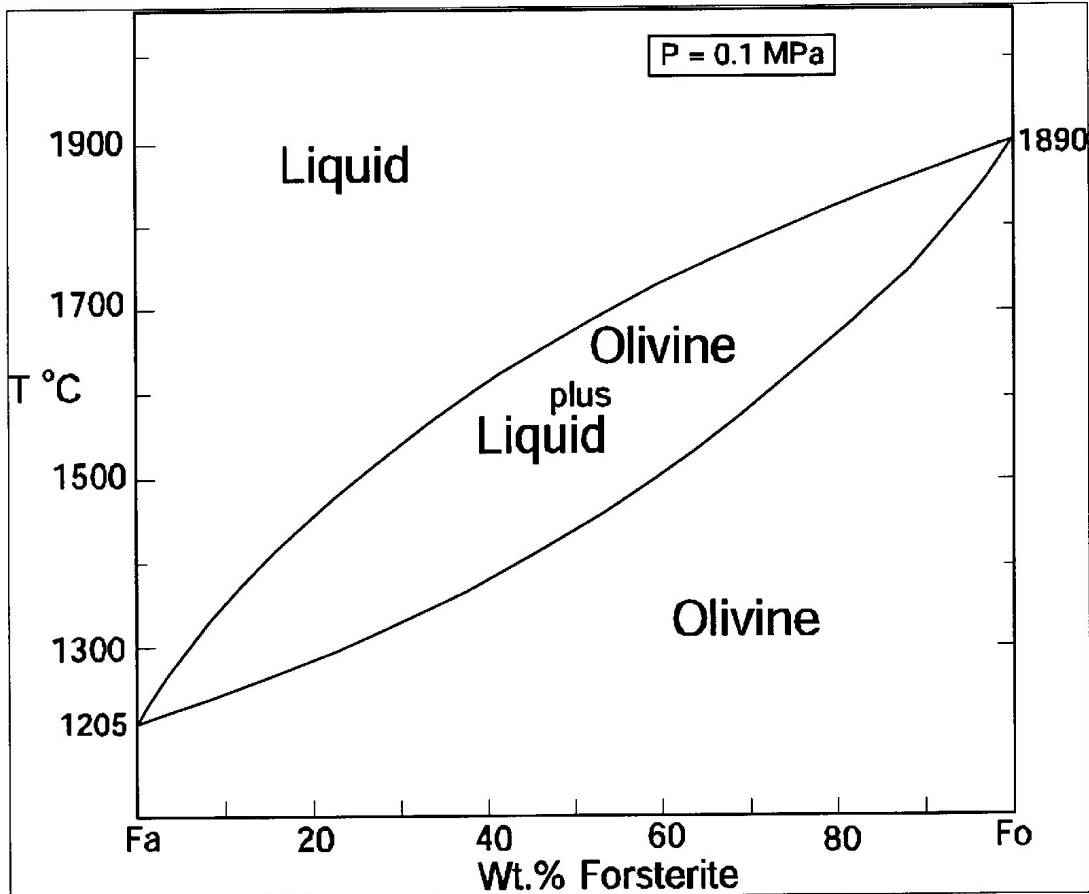April 26, 2006
Olivine: melting in a solid solution binary

Consider the following system:

1. Find the point on the graph that represents the system Fo_{20} at 1200°C and label it point **A**. Assume the system is now heated. At what temperature does melting begin?

2. Assume the system undergoes **equilibrium melting**: the melt and crystal residue remain together in a closed environment.
a) What percent olivine remains at 1400°C?

b) What is the composition of the melt at 1600°C?

3. Now assume the system undergoes **fractional melting**: the liquid is removed from the host rock as soon as it is formed.
a) What is the composition of the first melt to form? The last melt?

b) What is the composition of the last bit of olivine residue right before it melts?