

Lab homework assignment:

- **The data should be reported on the data sheet provided at the end of this section.**
- **Perform the following steps and answer the associated questions.**
 1. Generate a freehand plot of impact energy versus temperature for each of the three materials, **each on a separate graph**. Identify each graph by material.
 2. Determine the transition temperature (where appropriate) based on the graph in (1).
 3. Generate a freehand plot of percent ductile (shear) fracture versus temperature for the 1018 steel sample. Determine the transition temperature of this material from this graph.
 4. Compare the transition temperatures for 1018 annealed steel as determined in (2) and (3) above. What reasons can you give that may explain the differences? Do you believe the actual transition temperature is really different when determined by two different systems (energy and % ductile fracture)? What kinds of problems with the two systems would cause the temperatures to be different?
 5. Which one is tougher (1018 or 1045 steel)? Explain why one is tougher and base your argument on the microstructure differences between the two samples.

MEEN 215

Section: _____

Date: _____

Day: _____

[illegible]