**Phase Transitions Mid-lab Mini-report:**

Before the 4th period for this experiment turn in a brief report (3 or 4 pages) discussing your progress in the experiment. This report should contain:

* brief description of your samples, and, if applicable, description of sample preparation
* block and circuit diagrams showing basic experimental set-up and electrical connections, brief discussion of Lock-in amplifier measurement as it is used in your experiment (note that it will be used one way for measuring resistance, another way for measuring capacitance).
* Describe your measurement of a known resistor, and of a known capacitor; also, of the capacitance of a BNC cable (which can also be considered known) using Lock-in amplifier. Estimate uncertainties in your measurements and detail the sources of these uncertainties. Use error-propagation formulas when applicable. Resistor-measuring circuit and the report on the actual measurement should be accompanied by a brief discussion of a *4-probe* measurement technique. The cable capacitance measurement should be compared to cable specifications, which can be found on the Internet.

**Completed before 4th period for the experiment?** Yes/No

Staff comments:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Staff signature\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Include these signed sheets with your final report for the experiment.**