Physics 140 Discovery Room #6

7.2 phases of matter, phase transitions, latent heat, relative humidity; **7.3** thermal radiation, thermal expansion

Name_____ Date/Time_____

Hand-warmer

Activate the hand-warmer by "popping" the metal disc inside of it.

1 . What happened?

2. Where did the thermal energy that increased the temperature of the hand-warmer come from?

3. What is the equilibrium phase of the hand-warmer at room temperature?

Evaporation of water and alcohol

Dip the thermocouple into the water, then take it out and shake it.

1. What happens to the temperature of the thermocouple?

Now dip the thermocouple into the alcohol and shake it.

2. What happens to the temperature of the thermocouple?

3. How do the results of the experiments using the water and the alcohol compare? Is there is a difference, and if so, why?

Ice, Dry Ice, water and hot plate

Put a little water ice and a little dry ice into the liquid water.

1. Which one floats and why?

Put a puck of dry ice on the table. If you wait a little, it will vibrate and make some noise.

2. Why does this happen? If you put a piece of water ice on the table, does this happen? Why or why not?

Splash a few drops of water on the table and then splash a few drops of water on a well-heated hot plate.

3. Do the drops of water act differently on the table and the hot plate? Why or why not?

Light Bulb, Variac and Diffraction Gratings

Turn on the lamp with the variac (little gray box) and look at the spectrum of the light with the diffraction grating. (Look to the side, not at the light directly.) Turn up the voltage and notice how the spectrum moves.

1. How does this make sense in terms of blackbody radiation?

Mercury-switch thermostat

1 . Blow the hairdryer on the metal coil in the thermostat. What happens?

2 . Now blow the hairdryer on the coil of wire mounted separately to the wooden board. What happens?

3 . What is special about the metal coil in the thermostat? How do you think it is made?

Using the margins of this sheet of paper, write down a question regarding a topic, concept, or example you do not understand from this week in PHYS140.