

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Partner: \_\_\_\_\_

### Black Body Radiation

Submit this worksheet along with a second sheet that contains both graphs and all linest results.

	<i>units</i>	<i>Value</i>	<i>Uncertainty</i>
<i>R</i> <sub>300</sub> ( <i>Resistance of light bulb at room temp</i> )	$\Omega$		
<i>Length of filament</i>	<i>cm</i>		
<i>Temperature function T(ρ')</i>	<i>T(ρ') =</i>		
<i>slope of P vs T<sup>4</sup> graph</i>	<i>W/K<sup>4</sup></i>		
<i>slope of ln(P) vs ln(T) graph</i>	--		
<i>measured value of n (P = a T<sup>n</sup>)</i>	--		
<i>measured emissivity of tungsten (ε)</i>	--		
<i>accepted emissivity of tungsten (ε)</i>	--		

In the space below, comment on your results. How does your measured *n* agree with the theoretical value? If the measured *n* does not agree with the theoretical *n*, explain a possible cause for the discrepancy. How does your measured emissivity of tungsten agree with the accepted value as listed in the CRC? If they do not agree, explain a possible cause for the discrepancy.

Submit this worksheet, along with a single sheet containing all of the following:

- a) your graph of (*PT<sup>4</sup>*) vs. *T*.
- b) your graph of *P* versus *T<sup>4</sup>*
- c) your graph of and ln(*P*) versus ln(*T*).

As usual, make sure that all relevant linest results are visible.