

Name: _____

Date: _____

Partner: _____

Black Body Radiation

Your nicely formatted Excel worksheet should be placed in my inbox on \\files (\\files\Inbox\Physics\Pogo\OpticsLab; only one Excel document per group; it should be titled “BlackBody-Smith&Jones.xls”), assuming that you and your partner are named Smith and Jones, respectively. Please use .xls format (NOT .xlsx format). The worksheet must include all three plots: (P/T^4) vs. T , P versus T^4 , and $\ln(P)$ versus $\ln(T)$.

	<i>units</i>	<i>Value</i>	<i>Uncertainty</i>
R_{300}	Ω		
<i>Length L of filament</i>	<i>m</i>		
<i>Cross sectional area A of filament</i>	m^2		
<i>Radius r of tungsten filament</i>	<i>m</i>		
<i>Surface area S of tungsten filament</i>	m^2		
<i>Temperature function $T(\rho')$</i> <i>You may leave out units and uncertainties</i>	$T(\rho') =$		
<i>Slope of P vs T^4 graph</i>	W/K^4		
<i>Value of ϵ from P vs T^4 graph</i>			
<i>Slope from log plot:</i>			
<i>Intercept from log plot:</i>			
<i>Value of n from log plot</i>	--		
<i>Value of ϵ from log plot</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.