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GEOS 654

**Assignment 2**

1. Using Planck’s equation I calculated out the different Spectral radiant exitances for the different temperatures of the different wavelengths.

Visible Light

Figure : Black body curves for a hot surface

2)

Table : Wien's Law used to calculate out different objects wavelengths and temperatures

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Object | Wavelength (µm) | Wavelength (nm) | Wavelength (m) | Temp. (K) | A (µm-K) |
| Iron bar | 2.3 | 2300 | 2.3E-06 | 1273 | 2898 |
| Soil | 9.5 | 9500 | 9.5E-05 | 306 | 2898 |
| Lamp | 0.984 | 984.0 | 9.84E-07 | 2945 | 2898 |
| Star | 0.521 | 521 | 5.21E-07 | 5560 | 2898 |

3) Figure 2 is a temperature profile of the candle flame. This flame glows with colors of red, yellow, and white in the middle. Red is on the outside because it is the coolest area of the candle flame due to the cool air around it. As you move towards the middle of the flame the temperature increases and the wavelengths get shorter due to the higher temperature. Due to the shorter wavelengths you see different colors such as yellow or orange. In the middle of the flame white is the color due to the most energy is being emitted from the middle there is a mix of colors giving the white light that you see and the highest temperature.

Figure : Candle Flame temperature profile from A to A'