EEE – STAR

Fundamentals of Photovoltaics Training Task #1

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1. What is blackbody radiation? Explain.
2. Formulate blackbody radiation and plot spectral irradiance vs. wavelength of an object at 6000 K, 1500K and 300K for wavelengths between 0.1 – 100 m. (You might want to plot with x and y axis in log scale to see all of them clearly in a single graph.)



1. Compare the spectral irradiance for 6000 K you have calculated in the previous step with the standard AM 1.5G and AM 0 spectrums. (You can find the data for these spectrums on www.pvlighthouse.com.au) Explain the reasons of differences between the ideal (the one you calculated) and actual spectrums (AM 1.5G, AM 0).
2. Using the AM 1.5G data, calculate the integrated radiation intensity from the sun between 250- 4000 nm (the result is in W/m2 ) and compare it with the radiation usable by silicon. Explain your results. Hint: Silicon has a bandgap of 1.12 eV.

OPTIONAL PART

1. GUI Implementation