

1. Calculation of  $\rho_b$   $\Omega_b = 0.0456$

$$\Rightarrow \rho_b = \Omega_b \times \rho_c = 0.0456 \times 9.47 \times 10^{-27} \text{ kg/m}^3$$

$$\rho_b = 0.4313 \times 10^{-27} \text{ kg/m}^3$$

2. Temperature of Sun = 5778 K

Using Wein's law for blackbody radiation,  
we get

$$\lambda_{\text{peak}} T = 2.898 \times 10^{-3} \text{ mK}$$

$$\lambda_{\text{peak}} = \frac{2.898 \times 10^{-3}}{5778} \text{ m}$$

$$\lambda_{\text{peak}} \approx 0.5 \times 10^{-6} \text{ m}$$

~~E = \frac{hc}{\lambda}~~

$$E = \frac{hc}{\lambda} = \frac{6.626 \times 10^{-34} \times 3 \times 10^8}{0.5 \times 10^{-6}} \times (6.24 \times 10^{18}) \text{ eV}$$

$$\approx 2.4 \text{ eV}$$