



Tutorial 1

- T1.1 When Li is irradiated with light, the kinetic energy of the ejected electrons is 2.935×10^{-19} J for wavelength of 300 nm and 1.28×10^{-19} J for wavelength of 400 nm. Calculate the (a) Planck's constant (b) threshold frequency and (c) the workfunction of Li from these data.
- T1.2 Calculate the number of photons present in a light pulse of energy 5 μ J at wavelength 400 nm.
- T1.3 Calculate the kinetic energy of an electron with de Broglie wavelength 500 nm.
- T1.4 In Planck's black body radiation equation, show that the quantity $\rho_{\nu}(T)d\nu$ has the dimension of energy per volume.
- T1.5 You are doing Compton scattering experiments on electron using visible light of wavelength 500 nm and x-rays of wavelength 5 nm and you do not see Compton scattering using the visible light. Explain why.
- T1.6 Discuss how X-ray diffraction is used in crystallography.