

X-rays - opposite of the photoelectric effect.

Wilhelm Roentgen 1895 - discovered "bremsstrahlung"

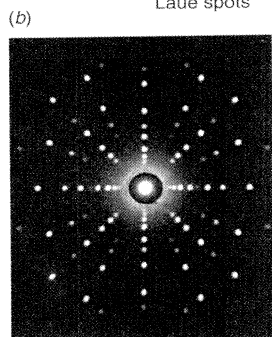
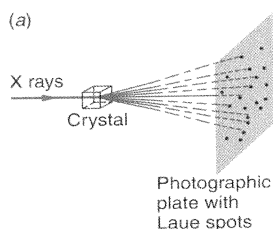
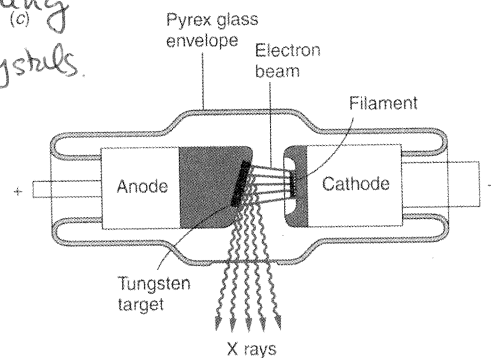
Max von Laue 1912 - X-ray diffraction in crystals.

William Bragg 1912 - Bragg's law.

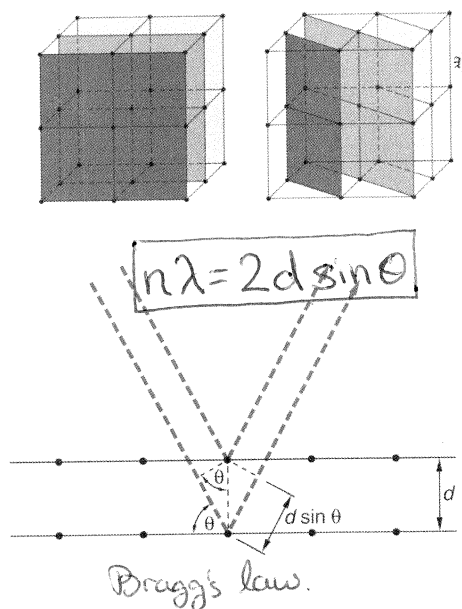
Duane, Hunt rule.

Arthur Compton 1923 - Compton scattering

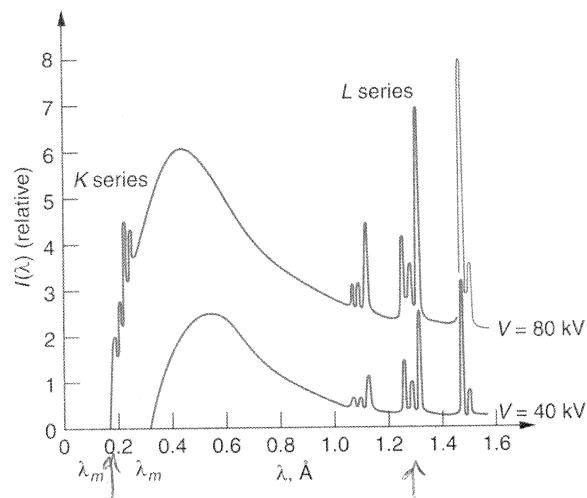
$$\lambda_m = \frac{hc}{eV}$$



Laue diffraction



Bragg's law.



Duane-Hunt

$$\lambda_m = \frac{hc}{eV}$$

atomic structure.
chapter 4!

Rayleigh Scattering

- why is the sky blue?
sunset red?

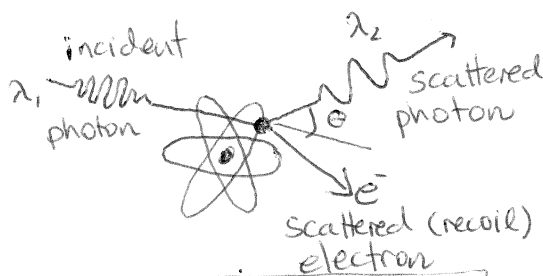


- how does the atmosphere protect us from X-rays, UV?

$$R \sim \nu^4$$

- same wavelength.

Compton Scattering



$$\lambda_2 - \lambda_1 = \lambda_c (1 - \cos \theta)$$

$$E_1 = h\nu_1 \quad E_2 = h\nu_2$$

$$E^2 = (pc)^2 + (mc^2)^2$$

(relativistic, good for any particle).