Methods of obtaining plane polarised light

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Polarisation by reflection

- In 1808,**Malus** discovered this simplest method of obtaining light.
- When ordinary light is incident on the surface of any transparent material, he found that the reflected beam is partially polarised.
- He also found that the degree of polarisation depends on the angle of incidence.
- The angle of incidence at which the reflected light is completely polarised is called **polarising angle**.

- When unpolarised light incident on a denser transparent medium from rarer medium ,the incident light is partially reflected and partly transmitted.
- The reflected light is completely polarised at a particular angle of incidence ,which is called Brewster's angle or polarising angle(i_p).

Brewster's law states that the tangent of angle of polarisation is numerically equal to the ratio of refractive index of denser medium (μ_2) to the refractive index of rarer medium(μ_1).

$\tan i_p = \mu_2 / \mu_1$

$\tan i_p = \mu_2 / \mu_1$-----(1)

$\sin i / \sin r = \mu_2 / \mu_1$ (Snell's law)---(2)

From (1)&(2)

$\sin i_p / \cos i_p = \sin i / \sin r$

$\cos i_p = \sin r = \cos(90 - r)$

$i_p = 90 - r$ or $i_p + r = 90^0$

This shows that when the angle of incidence i_p, the reflected ray and refracted ray are parallel to each other

Polarised light is obtained through the refraction and scattering also……

Thank you……