arization (derection of E) e.g. ware to the right Polarization $\vec{S} = \vec{L} \vec{E} \times \vec{B}$ \vec{z} \vec another possibility: Z E B E is polarized dog Z axis or ... any line as combination of those. Brdinary light is "unpolarized" - a superposition of EM waves with random polarizations. Line as polarized light: light with a single direction for \vec{E} . Planine: device that passes through the component of E parallel to the polarine axis.

clong chain molecules about horizontal E polarrid sheet : I only vertical polarization direct in Component goes through , incoming E with horizontal and vertical components polarization direction Ē $E_{ij} = E \cos \Theta$ after sheet before shat Recall Intensity ~ E? Malus's Iafter = Ibefore Co2 ? 0 Law where O = angle beteen polaring aten direction and E. Special case: initially unpolarized light: I after = Z I before unpolarized () polarized $I_{j=\frac{1}{2}I_{0}}$ I_=I, 0220 Ιo Polarizen vertial apis polariza, rotated an angle @ away from polaryn 1. Wanples = Ch25-polanizer-[1,2]. pdf

Crossed polarizers unpolarized 1 polarized Ιo $\Theta_1 = 0^\circ$ $\Theta_3 = 90^\circ$ $I_3 = I_1 a 2^2 9 l^\circ = 0$ Add a polarizing material in between $\begin{array}{c}
\overline{F_2} \\
\overline{7} \\$ Unpolarized 1 polarized Io θ_{a} $\Theta_{1}=0^{\circ}$ $\Theta_3 = 90^\circ$ $I_2 = I_1 co2^2(\theta_2 - \theta_1)$ $I_3 = I_2 \ln^2 \left(\theta_3 - \theta_2 \right)$ This can be a useful way to highlight materials that change polarijation. See examples in text.

Othen applications: Many optical phononena, such as scattering and reflection, are sensitive to polarization.

Brewster's Angle and Polarized Sunglasses E, topage reflected light E this corporant dominates the reflected light - air water in comé This E would be parallel to the out going reflected light, so isn't premt reported in the reflected light. If there would be a 90° angle between the refracted and reflected rap, the reflected ray is polarized. $\Theta_{B} = \tan^{-1}(m) = Brewsten's angle$ l.g. n = 1.52 (typical glass) $\Theta_{B} = 56.7^{\delta}$. This means reflected light is polarized - This glare Can then be blocked by polarized singlasses.