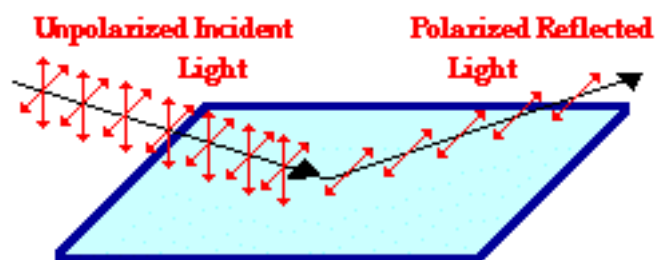


Sequence n° 6: polarization

ACTIVITY 1 : Which sunglasses for a summer by the lake?

Document 1: polarization by reflection

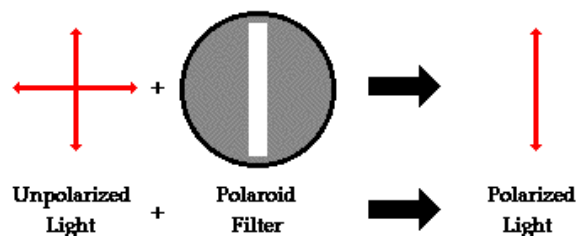
Unpolarized light can undergo polarization by reflection off of nonmetallic surfaces. The extent to which polarization occurs is dependent upon the angle at which the light approaches the surface and upon the material that the surface is made of. Metallic surfaces reflect light with a variety of vibrational directions; such reflected light is unpolarized. However, nonmetallic surfaces such as asphalt roadways, snowfields and water reflect light such that there is a large concentration of vibrations in a plane parallel to the reflecting surface. A person viewing objects by means of light reflected off of nonmetallic surfaces will often perceive a **glare** if the extent of polarization is large. Fishermen are familiar with this glare since it prevents them from seeing fish that lie below the water. Light reflected off a lake is partially polarized in a direction parallel to the water's surface. Fishermen know that the use of **glare-reducing sunglasses** with the proper polarization axis allows for the blocking of this partially polarized light. By blocking the plane-polarized light, the glare is reduced and the fisherman can more easily see fish located under the water.



Reflection of light off of non-metallic surfaces results in some degree of polarization parallel to the surface.

Source: wikimedia commons

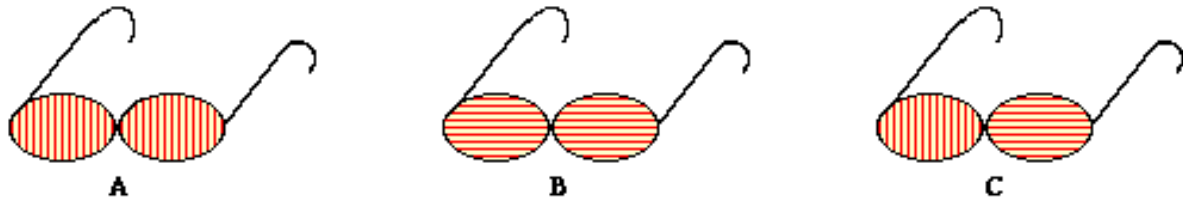
Document 2: polaroid filter



Source: wikimedia commons

■ **Problem: choosing your summer glasses**

Identify the pair of glasses that is capable of eliminating the glare resulting from sunlight reflecting off the calm waters of a lake? (The polarization axes are shown by the straight lines.)



Source: wikimedia commons

Activity summary

What you must remember:

- **polarization**
- **reflection**

Skills linked to the curriculum:

Compétences	Capacités à maîtriser
APP	Extraire les informations jugées pertinentes concernant la direction de polarisation d'une onde électromagnétique Prévoir l'effet d'un polariseur sur une lumière naturelle et sur une onde polarisée rectilignement. Citer des exemples d'ondes partiellement polarisées et non polarisées.
COM	Utiliser un vocabulaire scientifique adapté Présenter des résultats