Birefringence:

The birefringence of minerals can be used to identify them. For example, we can identify minerals using a petrographic microscope by seeing the effect of turning the plate has on what we see. This can be how many times a mineral dims or goes black, or how the colour changes. It’s really breathtaking when you see it for the first time

A picture containing cake, colorful, decorated, old

Description automatically generated

Figure : Calcite crystal as seen under a polarizing microscope. Field of view ~ 3 mm. Photo by stef\_climber on flikr.com

Stress birefringence:

The fact that stress leads to birefringence means we can identify materials which are or have been under stress, and perhaps identify where the material may break and repair or replace it.

Polarisation in space:

Polarisation can help us identify the source of emission in space, for example pulsars and active regions emit highly polarised light. The scattered light of the sky is also partially polarised, and some animals have adapted to detect this polarisation and use it to see and navigate, as it is perpendicular to the direction of the sun. This aspect also helps photographs dim a bright sky while taking pictures by adding a polarising lens and is why many sunglasses are polarisers.