

Optical Properties of Common Sedimentary Minerals

Calcite

Color in PPL: Colorless

Cleavage: Well-defined

Relief: Moderate negative to high positive relief; changes with rotation

Color in XPL (Birefringence): High (looks like washed out pastels, almost white)

Interference Figure: Uniaxial negative with numerous isochromes

Distinguishing Features: Cleavage, extreme birefringence, change in relief with slide rotation

Occurrence: Calcite is very common and occurs in many different rocks. Very commonly, calcite is a cement in sedimentary rocks. Calcite can also be found in fossils. Occasionally calcite may occur as clasts in a sedimentary rock. Less commonly, calcite is found in metamorphic rocks (marble, others). Calcite is rarely found in igneous rocks.

Quartz

Color in PPL: Colorless

Cleavage: None, conchoidal fracture.

Relief: Low positive

Color in XPL (Birefringence): Very low (colorless)

Interference Figure: Usually uniaxial positive

Distinguishing Features: Lack of cleavage, low relief, low birefringence, possible undulatory extinction (a “sweeping” extinction)

Occurrence: Quartz is a very common mineral. It may be found in all rock types. It may also be a cement in sedimentary rocks.

Feldspar

Color in PPL: Colorless

Cleavage: Well-defined

Relief: Low positive or negative

Color in XPL (Birefringence): Very low (colorless)

Interference Figure: Biaxial positive or negative

Distinguishing Features: Very commonly has **twinning** (see below), cleavage, low relief, alteration (in XPL, there may small, brightly colored minerals inside feldspar grains)

Occurrence: Feldspar occurs commonly in igneous, metamorphic, and sedimentary rocks.

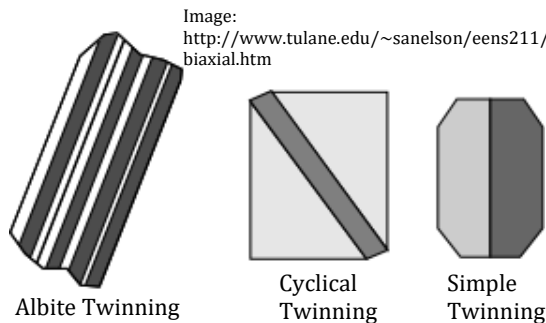
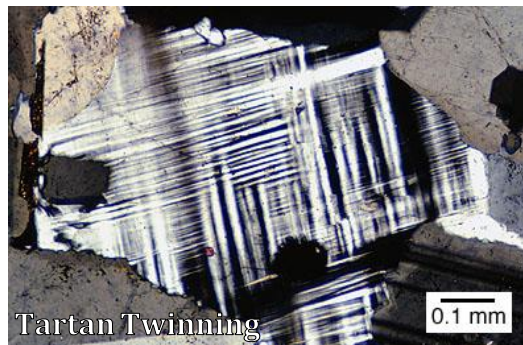


Image: <http://leggeo.unc.edu/Petunia/IgMetAtlas/minerals/microcline.X.html>



*Mineral properties from *Introduction to Mineralogy* by William D. Nesse