

Quadrant II – Transcript and Related Materials

Programme: Bachelor of Science (First Year)

Subject: Geology

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Paper Title: Fundamentals of Mineral Science

Unit: 04

Module Name: Interfacial angle and Contact Goniometer

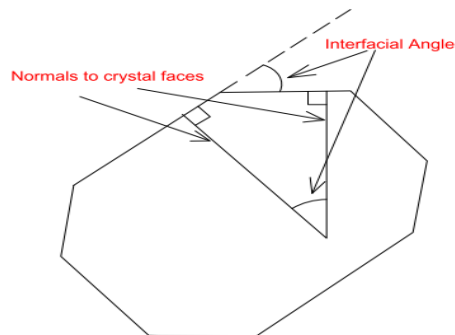
Module No: 39

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Notes

INTERFACIAL ANGLE

In crystallography, the interfacial angle which is normally denoted as A is the angle made by the normal or the perpendiculars drawn to the two adjacent faces of the crystal.



Law of constancy of angle

- In 1669, Steno, a Danish scientist, published a dissertation in which measurements on quartz crystals were described and illustrated.
- Steno examined the interfacial angles in a variety of quartz crystals, from perfect examples to some which were highly distorted.
- Prismatic crystals of quartz were sliced at right angles to their length and the angles between adjoining faces measured, after their shape had been accurately traced on to a sheet of paper.

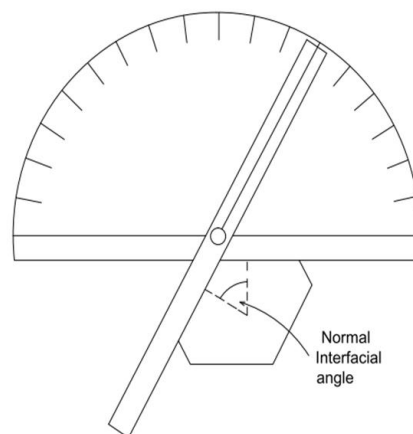
- He found that, whatever the shape of the quartz crystal, the angle between adjoining faces was always 120° .
- A similar result was obtained for other interfacial angles between corresponding faces on quartz crystals with different habits.
- This study led to the Law of Constancy of Angle which states: **“In all crystals of the same substance, the angles between corresponding faces have a constant value”**.

GONIOMETER

- The accurate measurement of interfacial angles was of obvious importance in crystallographic studies of minerals.
- Goniometer is an important instrument designed to measure the interfacial angles of the crystals.
- The most common type of Goniometer which is used world over is called CONTACT GONIOMETER.

CONTACT GONIOMETER

- A simple instrument used for the measurement of interfacial angles is known as contact goniometer.
- Contact Goniometer consists of a graduated steel protector which is connected to the steel arm as shown in the figure and it is movable with the help of a screw.



- Graduated steel protector and the movable arms are brought accurately into the contact with the adjacent faces of the crystal whose interfacial angle is to be determined.
- When the protractor has double graduations, internal and external, measurements with goniometer will give two values, total being 180° .
- Of these two values, one is called the internal solid angle and the other is external angle between the face and the extension of the other.
- This latter is termed as **interfacial angle**.