Crystals: A Few of the Many Facets

Crystals and crystalline materials are important in many aspects of science and engineering. Crystals are formed by both organic and inorganic materials and are solid materials composed of regular repeating arrays or lattices of atoms, ions, or molecules. These arrays allow crystals to form as solids showing a large number of regular geometrical shapes with edges and faces. Crystals also exist in a fascinating variety of colours and shades across essentially the whole visible spectrum.

These colours are often due to electronic transitions in traces of certain metals present, but they are also affected by nearby atoms in the host crystal lattice. Along with their colours, the variety of shapes gives crystals much aesthetic and decorative appeal.

The formation of crystals and their properties have many practical uses, especially in the purification of materials. They enable very important practical applications ranging from electronics, mineralogy, and chemistry to biology.

This talk will touch on a few aspects of the scientific phenomena involved in crystal formation, shapes, and colours, covering aspects of geology, physics, chemistry, and biology.