Module B. Colour from the Cosmos

Lesson 14: Beryl Mineralogy and Gemology

What is Beryl and What are its Basic Qualities?

Beryl is an aluminous beryllium cyclosilicate (Be3Al2Si6O18) that commonly forms hexagonal prisms with flat "basal" terminations, and less commonly more squat tabular prisms. It has a hardness of 7.5 to 8 on the Mohs scale, and is colourless when pure. A basal cleavage is present and fractures are described as conchoidal to splintery. Specific gravity of beryl ranges from ~2.6 to ~2.9, with variations due to element substitutions. Similarly, the refractive index of beryl ranges from 1.57 to 1.61 depending on its composition.

Long and shortwave UV fluorescence can also be observed in beryl, and is most commonly ascribed to the presence of trivalent chromium (Cr+3), which produces a red hue. The pink variety of beryl, morganite, will also fluoresce in UV light and commonly shows an orangey-pink hue. Fluorescence in UV light is one of the amazing features of Cr-bearing beryl. It means that not only does the stone reflect the Sun's visible light, but it also emits extra light when impacted by light in the UV range.