Module B. Colour from the Cosmos

Lesson 14: Beryl Mineralogy and Gemology

What are Common Treatments for Beryl?

The most common treatment for emeralds is oiling. Oils with a similar refractive index to beryl, such as cedarwood or palm oils, are often forced into cracks of the stone. When oil with a refractive index (~1.6) matching that of beryl fills the stone's air spaces (refractive index of air ~1), the stone appears less flawed and consequently commands greater value. Some new polymers with a matching refractive index are being used in emerald treatment to not only improve clarity, but also to add durability to the stones. Some of these polymers are patented and also purposely contain fluorescent components so that gemologists will be able to quickly tell if the stone has been treated. Emerald specimens still attached to the matrix (host rock) are sometimes repaired using epoxies if breakage has occurred.

Rough beryl of mediocre colour is often heat treated to bring out the blues, resulting in an abundance of aquamarine in the market. Undesirable green and yellow beryl contains oxidized iron (Fe+3); when heated, the iron in the crystal structure gets reduced to Fe+2 (i.e., it gains an electron), which imparts the stone with a lighter blue colour.