Module B. Colour from the Cosmos

Lesson 15: Beryl Geology and Geography

How Large Does Beryl Get?

The largest beryl crystals undoubtedly originate from pegmatites. Pegmatites provide a geological environment that facilitates the diffusion of the necessary elemental components (e.g., Be, Al, and Si) to form large beryl crystals. Large beryl crystals have been reported from numerous localities, including areas in Madagascar (many areas), Russia (Ural Mountains), and the USA (East and West coasts). Single crystals have been measured up to 18 m long and 3.5 m across, with estimated weights in the hundreds of tons!

One of the largest uncut emeralds of gem quality is the Guinness Crystal, now part of the collection of the Banco Nazionale de la Republica in Bogota, Colombia. The Guinness emerald crystal weighs 1795 carats and exhibits exceptional clarity and colour making it not only a large specimen, but also a very valuable one. The fine emeralds from Colombia, as noted before, are hosted in an unusual environment for Be enrichment. The size of the resulting quartz veins and the dynamic nature (during tectonic activity) of the vein formation limits the upper end of the scale for the size of stones. One of the largest cut emeralds is a 75.47 carat Colombian beauty and is called the Hooker Emerald. It is housed in the Smithsonian Institution in Washington D.C., USA.

The Hooker Emerald. The brooch is part of the Gem and Mineral Collection of the Smithsonian [National Museum of Natural History](http://www.mnh.si.edu/).

Exquisite aquamarines are also found in historical pieces of jewelry, typically the possessions of royalty. One such example is a 10-cm long sword handle weighing in at over 400 carats, once belonging to Joachim Murat, a French cavalry commander. An exceptionally large and flawless golden beryl from Brazil is in the collection of the National Museum of Natural History in Washington DC and weighs an astonishing 2054 carats! In general, aquamarine, heliodor, morganite, goshenite and pale green beryl (not emerald) exhibit the largest size crystals in the beryl family. Emeralds of gem quality that qualify as exceptionally large are in the 50 carat range, while exceptionally large red beryl is in the 5 carat range.

The large yellow beryl in this image is the largest faceted beryl in the world, weighing 2054 carats (410.8 grams!). Photo courtesy of the [Gemological Institute of America](http://www.gia.edu/).