

The rarest gem mineral on Earth – Kyawthuite



Kyawthuite, the rarest mineral on Earth, is a transparent deep orange coloured gemstone having a chemical formula of $\text{Bi}^{3+}\text{Sb}^{5+}\text{O}_4$, with traces of tantalum. Further research revealed that the rarest mineral contains trace levels of vanadium and chromium as well as trace amount of $\text{OH}/\text{H}_2\text{O}$. The Raman spectrum is similar to that of synthetic $\text{Bi}^{3+}\text{Sb}^{5+}\text{O}_4$.

Kyawthuite. is brittle stone with a conchoidal fracture. It belongs to monoclinic system with an adamantine lustre. Structural analysis showed that it is isostructural with clinocervantite (a crystal containing Sb(III) and O), and also an antimony-analogue of clinobisvanite (a crystal containing Sb(V) and O). It has three directions of perfect cleavage and shows very slight pleochroism.

It was found by gemstone prospectors in the year 2010, as a water worn crystal in alluvium, likely originated from a pegmatite, in the Chaung-gyi valley, near Mogok, Burma (Myanmar). Only one sample of the naturally occurring form of this mineral has been found, making it not only the rarest mineral but also the rarest gemstone.

Dr. Kyaw Thu, a Burmese mineralogist-petrologist-gemologist and owner/operator of the Macle Gem Trade Laboratory purchased the rough stone and faceted the stone to a single gemstone weighing 1.61 cts. In December 2015, the International Mineralogical Association recognised it as the first ever discovered gemstone in the world and the stone was named as “Kyawthuite”. The Stone is currently being exhibited at the Natural History Museum of Los Angeles County in the United States.

Sources:

<https://www.geologyin.com/2023/01/the-rarest-mineral-on-earth.html>

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