

# Microfeatures of Beryl Group Gems including the Newest Mineral Variety, Johnkoivulaite

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Beryl group minerals often provide clues to their pegmatitic origin in the suite of inclusions contained within such gems. They regularly showcase examples of pegmatitic minerals such as albite, muscovite, spessartine, quartz and other minerals that form in those environments or environments where pegmatitic interactions played a role in their formation, such as contact metamorphism with ultramafic rocks which may result in emerald formation (Figure 1) (London, 2008). They also regularly contain complex fluid inclusions, which can result when gems crystallize in fluid rich pegmatites (Figure 2). While the inclusions found in

beryl are generally not diagnostic of a particular origin, they do provide a wonderful view into the types of geologic interactions that are responsible for producing beryl gems. This presentation will focus on a wide cross section of unique inclusions seen in beryl gems from a number of deposits.

Recently a new gem mineral was added to the beryl group. A cesium, boron and magnesium rich beryl from Mogok, Myanmar, Johnkoivulaite was named after gemologist John Koivula (Palke et al, 2021). The inclusions in the type specimen of Johnkoivulaite were primarily etch tubes with limonitic epigenetic residue (Figure 3).

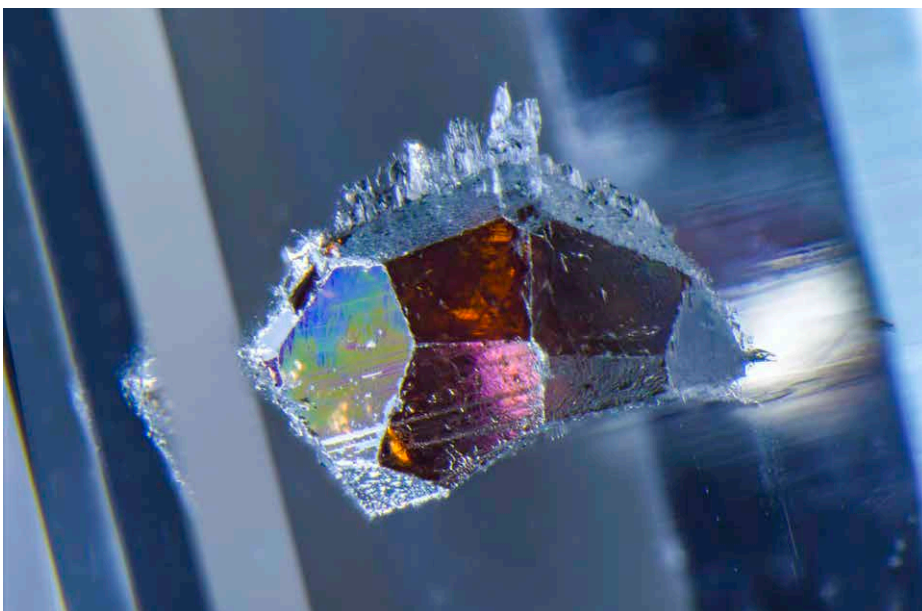


Figure 1: This aquamarine from Pakistan contains a beautiful spessartine garnet. Both minerals provide clues to their pegmatitic origin. Field of View: 5.63mm Stone Courtesy of the John Koivula Inclusion Collection.

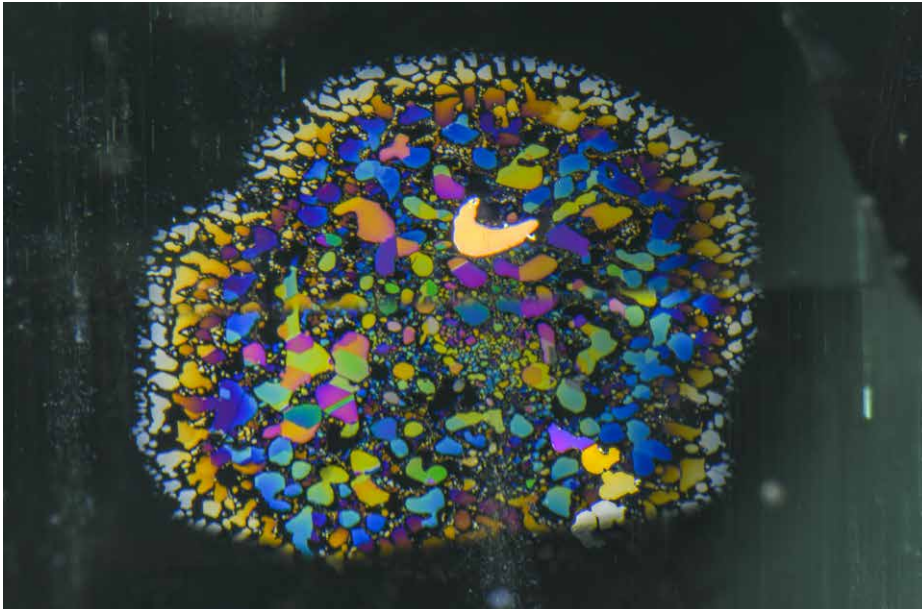


Figure 2: This iridescent thin film fluid inclusions in this beryl provides proof of fluids present in the growth environment. These fluid inclusions are trapped along the basal plan of the beryl and often have a hexagonal shape consistent with crystallographic alignment of the host beryl. Field of view j5.63mm. Stone Courtesy of the John Koivula Inclusion Collection.

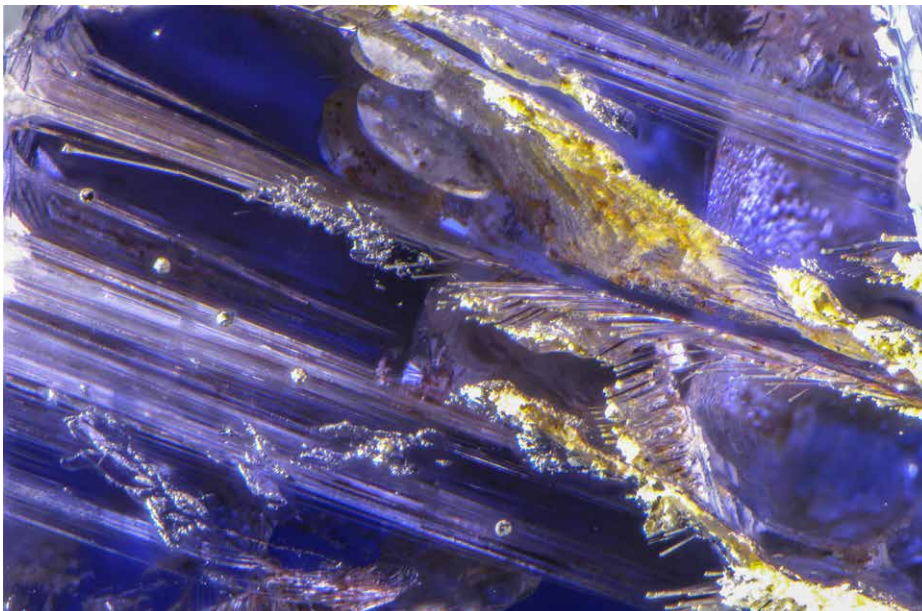


Figure 3: Etch tubes were present in the type specimen of johnkoivulaite, a new Cesium, Boron and Magnesium rich mineral variety of the beryl group. Field of view 4.01mm

### References:

- London, D. 2008. Pegmatites. Mineralogical Association of Canada, 347pp.
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Weeramonkhonlert, V. 2021. Johnkoivulaite, Cs (Be<sub>2</sub>B) Mg<sub>2</sub>Si<sub>6</sub>O<sub>18</sub>, a new mineral of the beryl group from the gem deposits of Mogok, Myanmar. *American Mineralogist: Journal of Earth and Planetary Materials*, 106(11), 1844-1851.