

## A Shattuckite Briolette

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Recently, we received for identification an 8.13 ct intense blue briolette measuring 14.69 x 10.90 x 6.29 mm (Figure 1). On initial observation, it appeared to be composed of azurite and chrysocolla because of its patchy intense blue colouration along with presence of some green patches (Figure 2, left).

The gemmological refractometer showed a vague shadow edge at  $\sim 1.76$ , while the hydrostatic SG was 3.94. With the desk-model spectroscope, a broad absorption band was visible from the green through red region. Magnification revealed a radiating fibrous pattern that is typical of spherulitic growth (Figure 2, right), and was associated with banding and uneven colouration of the specimen. The RI and SG values ruled out chrysocolla, and the SG was somewhat higher than expected for azurite, but this possibility could not be discarded (cf. O'Donoghue, 2006).

Raman spectra in the region  $200\text{--}2000\text{ cm}^{-1}$  identified the specimen as shattuckite, with characteristic peaks at  $\sim 259, 329, 395, 450, 508, 559, 661, 775, 847, 942$  and  $1069\text{ cm}^{-1}$  (see, e.g., [www.rruff.info/doclib/hom/shattuckite.pdf](http://www.rruff.info/doclib/hom/shattuckite.pdf)), while the green areas displayed peaks for malachite.



Figure 1: This 8.13 ct intense blue briolette submitted to the Gem Testing Laboratory, Jaipur, India, was identified as shattuckite.

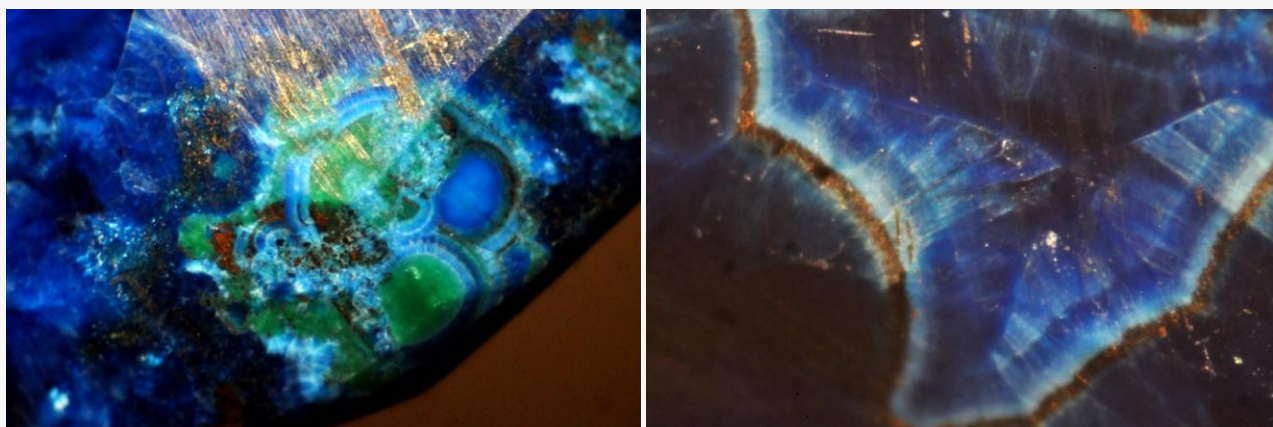


Figure 2: Some green patches of malachite also were present in the shattuckite specimen (left, image width 6.35 mm). The radiating fibrous pattern is typically associated with spherulitic growth (right, image width 5.08 mm).

Shattuckite is a hydrous copper silicate,  $\text{Cu}_5(\text{SiO}_3)_4(\text{OH})_2$ , which occurs as a secondary mineral in oxidized copper deposits and is commonly associated with chrysocolla, ajoite, malachite and quartz (Anthony et al., 1995). It is known from Bisbee (Shattuck mine), Arizona, USA, as well as Namibia, Democratic Republic of Congo (Overlin, 2014), Chile and elsewhere (Anthony et al., 1995).

This specimen was identified as shattuckite on the basis of Raman spectroscopy, and without this technique it could have been mistaken for azurite. The client was not unaware of the sample's identity or origin.

### *References*

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All photographs by Gagan Choudhary

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