

Violet Tourmaline from Democratic Republic of Congo

Gem-quality tourmaline is known in virtually every colour, but violet is rather uncommon. While on a buying trip to Africa in the first part of 2017, rough stone dealer Farooq Hashmi obtained an unusual violet tourmaline from his supplier in Rwanda. The crystal was taken from a small parcel of rough tourmaline that reportedly came from a new mine in the Democratic Republic of Congo (DRC). The crystal measured ~1.2 cm long (Figure 31), and the bottom part of it was subsequently faceted into a 1.42 ct round modified brilliant for this report (Figure 32).

The faceted stone and crystal section were examined by authors CW and BW. The crystal exhibited a hexagonal cross section, and the prism faces were lightly striated parallel to the c-axis. The crystal termination was composed of three near-equal rhomboid pyramidal faces. Both the rough and cut samples were greyish violet and were inert to UV radiation. The RIs of the faceted stone were 1.620–1.640, yielding a birefringence of 0.020. The SG of the faceted stone was measured hydrostatically as 3.06. The main inclusions in both samples were fluid-filled partially healed fissures. In addition, the crystal hosted numerous growth tubes oriented parallel to the c-axis that were filled with a reddish brown epigenetic material (Figure 33), while the faceted stone contained some fine frosted ‘fingerprint’ inclusions and some reddish brown solid inclusions with no discernible crystal form. Raman analysis with the GemmoRaman-532SG instrument gave the closest match to elbaite, and EDXRF spectroscopy gave strong peaks for Mn, Fe, Ca and Zn. Although Zn is somewhat unusual in gem tourmaline, a significant amount of this element was likewise detected (together with the other elements mentioned above) in a chemical analysis of the crystal by John Attard (Attard’s Minerals, San Diego, California, USA) using EDXRF spectroscopy.

Energy-dispersive chemical analysis of the faceted stone with a scanning electron microscope by author AUF showed that the tourmaline was elbaite with Mn as the principal chromophoric element.

It remains to be seen whether additional production of this unusually coloured gem tourmaline from DRC will enter the market.

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Figure 31: This violet tourmaline crystal (~1.2 cm long) was reportedly produced from a new mine in the DRC. Photo by Farooq Hashmi.



Figure 32: A portion of the tourmaline crystal in Figure 31 was faceted into a 1.42 ct gemstone by Todd Wacks (Tucson Todd’s Gems). The remaining part of the crystal is 6.54 mm long. Photo by B. Williams.

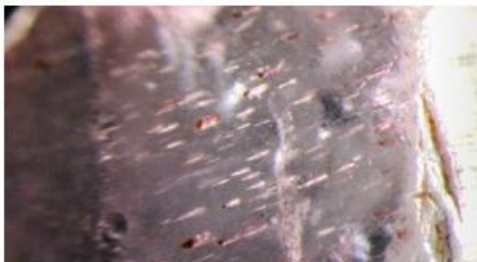


Figure 33: An array of growth tubes oriented parallel to the c-axis are located just under the pyramidal termination of the tourmaline crystal, and are filled with a reddish brown epigenetic material. Photomicrograph by B. Williams; magnified 25x.