Figure 30: Colourless hexagonal prisms with the appearance of apatite also formed inclusions in the Mozambique spinels. Photomicrograph by Idan Shaulov; magnified 60×.

Also present were 'fingerprints' and small transparent hexagonal prisms that were doubly refractive and had the appearance of apatite (Figure 30).

The specific locality (or localities) for these spinels in Mozambique is presently unknown to the authors, but given the differences in the colour appearance and SG of the stones examined by each author, it is possible that they came from more than one deposit.

Guy Borenstein FGA and Menahem Sevdermish FGA
(smenahem@gemewizard.com)
Gemewizard Gemological Laboratory
Ramat Gan, Israel

Edward Boehm FGA

Reference

Boehm E., 2016. Gem Notes: Pink spinel from Mozambique. *Journal of Gemmology*, **35**(2), 109–111.

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

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

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.

Cara Williams FGA and Bear Williams FGA

Alexander U. Falster and
Dr William 'Skip' B. Simmons
Maine Mineral & Gem Museum
Bethel, Maine, USA

Brendan M. Laurs FGA

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.

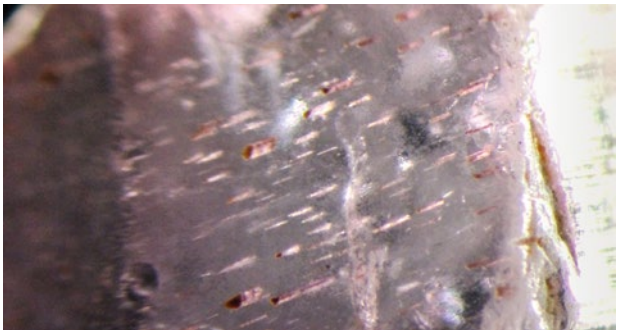

Figure 33: An array of growth tubes oriented parallel to the c-axis are located just under the pyramidal termination of the tourmaline crystal, and are filled with a reddish brown epigenetic material. Photomicrograph by B. Williams; magnified 25×.

ORGANIC MATERIALS

Burmese Amber from Khamti, Sagaing Region

Burmese amber, also called *burmite* (or *pa-yin* in Burmese), is a Cretaceous fossilised resin. Most commercial extraction of burmite has focused on several important sites in the Hukawng Valley of Kachin State in northern Myanmar (Figure 34). In recent years, political instability in Kachin State forced many amber (and gold) miners to flee the area and search for deposits in other regions of Myanmar. For example, in 2010–2011 a new locality for Burmese amber was discovered near Hti Lin, Magway Region, central Myanmar (Figure 34; Tay Thye Sun et al., 2015).

In addition, many local miners (who are mainly farmers) from Kachin State started searching for new gem deposits to the west along the Chindwin River. In 2012–2013, another amber mining area was found near Khamti (or Hkamti) Township, which is located 180 km northwest of Myitkyina, in the Sagaing Region of north-western Myanmar (Figure 34). Currently more than 1,000 miners are active there in both open-pit and underground workings (Figure 35). The amber-bearing seams form in strata with coal and calcite that are hosted within shale layers, typically ~20–30 m below the surface. The overlying soil is around 3–5 m thick. In addition to producing amber, the miners also recover *fei cui* (Burmese jadeite) and gold in this area.

Thirty-two Khamti amber samples were examined using standard gemmological instruments and Fourier-transform infrared (FTIR) spectroscopy. All were polished cabochons or free-forms of gem quality, weighing 0.72–55.67 ct. They displayed a wide range of colours, from pale 'lemon' yellow, 'honey' yellow and brownish yellow to dark brown, as well as some unusual colours such as 'cherry' red and 'tea-leaf' green to dark greenish brown (e.g. Figure 36, left). Some brownish yellow, reddish brown and cherry-red samples showed a bluish