

Black Star Sapphires from Liberia

Black star sapphires are well-known from Thailand and Australia (e.g. Wüthrich and Weibel, 1981; Moon and Phillips, 1984). During the 2016 Tucson gem shows, Eric Braunwart (Columbia Gem House, Vancouver, Washington, USA) had black star sapphires from a new locality: Liberia. He indicated that this material has been produced since approximately mid-2015, commonly as large crystals (approaching 250 g). The rough is processed by first identifying its crystallographic orientation, then slicing it into slabs, and finally looking for areas that are likely to show asterism when cutting cabochons. Approximately 1,000 cabochons have been cut so far, ranging from 8 × 6 mm to 30 ct (e.g. Figure 12).

Braunwart loaned a 7.01 ct cabochon for examination, and the stone was confirmed as corundum using a GemmoRaman-SG spectrometer. The six-rayed star was slightly off centre and consisted of one strong band and two weaker bands. Its colour appearance was similar to other black star material, and its slightly translucent edges showed a medium greyish ‘golden’ brown body colour. Magnetic susceptibility was moderately strong, with the sample easily dragged by an N-52 neodymium magnet.

Microscopic observation revealed a consistent cross-hatched texture due to repeated parallel parting planes in two directions. Scattered short, dark stick-like inclusions (Figure 13) were identified as hematite by an Enwave 785 micro-

Raman spectrometer. With 40× magnification, fine, short, silvery-gold needles created ‘silk’ in the stone that was responsible for the asterism. EDXRF spectroscopy with an Amptek X123-SDD unit revealed high contents of Fe and Ti—even higher than in Thai black star sapphires in these authors’ experience. Calcium was nearly three times the concentration of the Thai stars, suggesting a possible metamorphic influence.

The back of the cabochon was smooth and well-polished, showing no signs of delaminating parting planes (as is commonly seen in Thai black stars, requiring stabilization with a polymer). As reserves of black star sapphires are depleted, this additional West African source is welcome news. Braunwart is stockpiling additional rough material, and the deposit appears to show good potential for future production.

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References

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- Wüthrich A. and Weibel M., 1981. Optical theory of asterism. *Physics and Chemistry of Minerals*, **7**(1), 53–54.

Figure 12: This 8.65 ct black star sapphire is representative of material from the new find in Liberia. Photo by Orasa Weldon.



Figure 13: Hematite inclusions are seen here on the base of a black star sapphire cabochon. Photomicrograph by C. Williams; magnified 40×.

