Gem Notes

COLOURED STONES

Almandine from Erving, Massachusetts

At the Springfield Gem and Mineral Show (Massachusetts, USA) in August 2014, a new production of almandine debuted (see, e.g., www.minerals.net/news/post/2014/09/11/Garnet-from-Red-Embers-Mine-Erving-MA.aspx). The garnets were mined from an area near Erving, Massachusetts, by Jason Baskin of Jay's Minerals (Flemington, New Jersey). Currently named the Red Embers mine, Baskin has been secretly working the deposit with hand tools since 2008. Baskin has heard that a major retailer of fine coloured stone jewellery once sourced garnets from this deposit around the turn of the 20th century, but this has yet to be confirmed. The authors first viewed these garnets in 2009, but due to confidentiality agreements with the owner of the property, no announcements could be made at that time.

According to Baskin, mining these garnets will 'leave their mark' on you. The almandine is hosted by a layer of biotite-graphite schist, and Baskin wears a protective suit (Tyvek; see Figure 1) during the digging process since everything gets coated with a dark, slick layer of graphite. This tough and dirty work would thwart most hobbyist prospectors.

Figure 1: At the Red Embers mine, Jason Baskin wears a Tyvek suit while digging for garnets within graphite-rich schist. Courtesy of Red Embers Mining.

Much of the garnet production consists of attractive mineral specimens (e.g. Figures 2 and 3). Baskin prepares the specimens by carefully removing the matrix from both sides of garnet-bearing schist slabs using an air abrasion tool equipped with plastic media. Light can then be transmitted through the garnets to show their deep red colour (Figure 3). Indeed, with proper lighting one can see how appropriate the 'Red Embers' name is. Most of the specimens contain multiple garnets, while some feature only a single crystal; the largest garnet found to date measures 21.36 mm in diameter. Embedded along the foliation within the graphite of some of the specimens (e.g. Figure 2) are dark needles that have been identified as dravite. Gems up to 4.74 ct (Figure 4) have been faceted from the garnets, although most are less than 0.80 ct (5.5 mm in diameter). Numerous stones have been cut into calibrated sizes.

Eight mineral specimens and 28 cut samples (0.20–4.74 ct) were examined for this report. The faceted material showed a saturated red colour, with faint brown tones seen in some of the gems; none exhibited bluish tones. RI was over the limit of the refractometer, but based on other measured properties, it is estimated at just over 1.81 (cf. Hoover et al., 2008). SG was measured hydrostatically as 4.24, and the magnetic susceptibility of these garnets was determined by D. Hoover as 32.8 SI (see Hoover et al., 2008, for an explanation of magnetic data). Raman spectroscopy indicated the garnet to be predominantly almandine with some spessartine and minor pyrope components. Chemical analysis by energy-dispersive X-ray fluorescence (EDXRF) spectroscopy showed a

Figure 2: This slab of graphite schist (10 × 8 cm) from the Red Embers mine contains several almandine crystals and dravite needles. Photo by B. Williams.

Figure 3: Transmitted lighting shows the ember-like appearance of the garnets in this multi-crystal specimen (16 × 11 cm). Photo by B. Williams.

Figure 4: The largest almandine cut to date from the Red Embers mine is this 4.74 ct round brilliant. The other cut stone (5 mm in diameter) displays the red colour typical of most of the smaller faceted stones. Photo by B. Williams.

high Fe content, consistent with almandine. There was also significant Mn and a minor amount of Ca. However, Mg (being a relatively light element) was below the detection limit of the instrument. Crystal inclusions were plentiful in many of the stones, and although they were not positioned where they could be identified by Raman analysis, most appeared to be apatite, with dark mica (probably biotite) also present. The results obtained from the current samples matched those of the specimens we first examined five years ago.

While the cut stones provided good material for gem testing and inclusion observations, it was the matrix specimens that were our favourite. The red glow of the garnets against the matte silver of the biotite-graphite schist makes for very attractive display pieces, especially when multiple crystals are present.

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Reference

Hoover D.B., Williams C., Williams B. and Mitchell C., 2008. Magnetic susceptibility, a better approach to defining garnets. *Journal of Gemmology*, **31**(3/4), 91–103, http://dx.doi.org/10.15506/jog.2008.31.3.91.