Figure 18. These attractive orange-red garnets (1.35–6.92 ct) from Tanzania's Umba Valley proved to be pyrope-almandine. The trilliant is a gift of Precious Gemstones Co.; GIA Collection no. 36746. Photo by Robert Weldon.

visible with the desk-model spectroscope. There was no observable shift in color between daylight-equivalent and incandescent light sources. These properties are similar to those reported for pyrope-spessartine, but they are more consistent with pyrope-almandine, according to C. M. Stockton and D. V. Manson ("A proposed new classification for gem-quality garnets," Winter 1985 *Gems & Gemology*, pp. 205–218). Microscopic examination revealed no inclusions and only minor surface abrasions on the stones.

EDXRF spectroscopy of the 1.35 ct garnet showed major amounts of Si, Al, Mg, and Fe, as well as minor Ca and Mn. Electron-microprobe analysis of the other three samples at the University of New Orleans confirmed the identification as pyrope-almandine, yielding the following components: 71.1–73.1% pyrope, 18.9–21.7% almandine, 7.0–8.5% grossular, and 0.2–0.4% spessartine, along with traces of the andradite component.

East Africa is a common source for pyrope-almandine that typically ranges from reddish orange to red-purple, with the latter color referred to as *rhodolite* by the gem trade. The red-purple coloration of rhodolite is very different from the orange-red color of the pyrope-almandine examined for this report. Rhodolite also commonly contains abundant oriented needle-like rutile crystals (e.g., P. C. Zwaan, "Garnet, corundum, and other gem minerals from Umba, Tanzania," *Scripta Geologica*, Vol. 20, 1974, pp. 1–41), which were not seen in the pyrope-almandine garnets we studied.

East Africa is also known for producing pyrope-spessartine in the pink to red to orange to yellow-orange range, which has been marketed as *malaya* garnet (see Stockton and Manson, 1985; K. Schmetzer and H. Bank, "Garnets from Umba Valley, Tanzania—Members of the solid solution series pyrope-spessartine," *Neues Jahrbuch für Mineralogie, Monatshefte*, Vol. 8, 1981, pp. 349–354). A wide range of compositions have been reported for malaya garnets from East Africa, with most having a 30–55% spessartine component, but some having as low as 10–30% spessartine (Stockton and Manson, 1985).

The garnets examined for this report did not contain enough spessartine component to be called malaya garnets, and they are best referred to as pyrope-almandine since they lack the purple hue of rhodolite.

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Pink-to-red tourmaline from Myanmar. Rubellite tourmaline from Myanmar is well known as fibrous mushroom-like crystals from the Mogok area (see T. Hlaing and A. K. Win, "Rubellite and other gemstones from Momeik Township, northern Shan State, Myanmar," *Australian Gemmologist*, Vol. 22, 2005, pp. 215–218). From late 2006 to February 2007, well-formed prisms of pink-to-red tourmaline were mined from a pegmatite located about 80 km northeast of Mandalay, at Letpanhla in Singu Township. The pegmatite is hosted by rocks of the Mogok metamorphic belt that strike in a north-south direction.

The tourmaline crystals had typical striated prism faces and were terminated by rhombohedral faces (e.g., figure 19). This contributor estimates that ~5 kg of fine-quality crystals were produced, as well as >100 kg

Figure 19. A new source of Burmese tourmaline was found in late 2006 at Letpanhla, located between Mogok and Mandalay. The Letpanhla crystals shown here range from 3.5 to 7.1 cm tall. Courtesy of Pala International, Fallbrook, California; photo by Robert Weldon.

Figure 20. This 31.5 ct cabochon of Letpanhla tourmaline shows a saturated pink color that is considerably more intense than is typically seen in tourmaline from this locality. Courtesy of U Tin Hlaing.

Figure 21. Chatoyant tourmaline has also been cut from the Letpanhla material (here, 6.24 and 7.21 ct). Photo by Mark Smith, Thai Lanka Trading Ltd., Bangkok.

of lower-quality pink material. The tourmaline typically contains fine tubes parallel to the c-axis and abundant fluid inclusions (trichites). Several hundred cabochons have been cut, ranging from 5 to 50 ct each (e.g., figure 20). Rare cat's-eye cabochons also have been produced from the Letpanhla material (figure 21).

There appears to be good potential for additional finds of tourmaline and other pegmatite minerals from the Mogok metamorphic belt in the area between Thabeikyin and Sagyin.

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SYNTHETICS AND SIMULANTS

Glass object with circular bands. Rock crystal quartz is often used as a carving material for various symbolic objects in India, but these items are commonly imitated by colorless glass, so they are routinely sent to gemological laboratories for identification. Recently, at the Gem Testing Laboratory in Jaipur, India, we received an approximately 188 ct colorless specimen (figure 22) in the shape of a "Shivling," which is the symbol representing Lord Shiva in Hindu theology.

Our initial observation included the use of fiber-optic lighting to look for tell-tale signs of glass, such as gas bubbles or swirls. The most conspicuous feature was a curved zone of whitish bands visible through the base of the object (figure 23, left); these bands resembled the curved striae seen in flame-fusion synthetic sapphire. However, the specimen had a lighter heft than would be expected for that material. When viewed from the side (in a direction perpendicular to the axis of curvature of the whitish bands), straight parallel lines were seen (figure 23, center).

At higher magnification, the curved bands appeared to be composed of planes of white pinpoint inclusions (figure 23, right) that created a hazy effect in some areas of the specimen. Also present were scattered whitish crystallites and gas bubbles.

The combination of the white crystallites, gas bubbles, and swirls identified the material as glass; a spot RI value of 1.52 was consistent with this identification. Still, further tests were performed for our records. Examination between crossed polarizers revealed a strain pattern (as is typically seen in glass) along the edges of the curved whitish zone. When exposed to short-wave UV radiation, a strong pinkish purple fluorescence was confined to this zone, which was bordered by a narrow fringe of blue fluorescence (figure 24); the sample was inert to long-wave UV. We have noted

Figure 22. This 188 ct "Shivling," approximately 4.0 cm tall, was represented as rock crystal quartz, but proved to be manufactured glass. Photo by G. Choudhary.