

Garnet from Mahenge, Tanzania

The Mahenge area in the Morogoro region of south-central Tanzania is a well-known source of several gem varieties, particularly spinel and ruby. During the 2016 Tucson gem shows, Steve Ulatowski (New Era Gems, Grass Valley, California, USA) had some pink to orangey

pink garnets from a new find in this area that he sold as 'Mahenge Malaya'. He obtained the rough material in mid-December 2015 in Arusha, Tanzania. Consisting of clean alluvial pebbles, the garnet ranged from pinkish orange to a saturated 'hot' pink. Most of the production was rather



Figure 10: Weighing 6.79 and 6.84 ct, these faceted garnets from Mahenge, Tanzania, are unusually large for this new find. Courtesy of Evan Caplan; photo by Jeff Scovil.

small sized, although Ulatowski encountered ~1 kg of material consisting of >0.5 g stones, with the largest pieces weighing >3 g. Faceting of two of the largest pieces yielded attractive pink and pinkish orange gemstones weighing 6.79 and 6.84 ct (Figure 10).

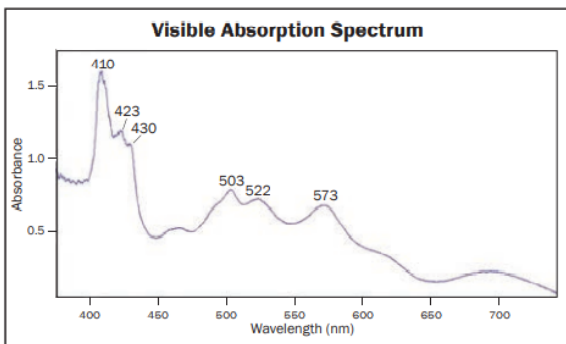
Ulatowski loaned a 3.22 ct triangular preform for examination, and the table facet was kindly polished during the show by Todd Wacks (Tucson Todd's Gems, Tucson, Arizona). Its colour was 'fleshy' pink with a faint brown tint (World of Color 2.5R5/6, Brownish Red) under daylight-equivalent lighting. Viewed with incandescent lighting, the brown tint was not evident and the stone appeared slightly more reddish pink (World of Color 2.5R5/10, Moderate Red). This colour behaviour is typical of many so-called Malaya or colour-shift garnets from East Africa. The stone had an RI of 1.751 and a hydrostatic SG of 3.82. Anomalous extinction was observed

between crossed polarizers, and the garnet was inert to both long- and short-wave UV excitation. Magnetic susceptibility was not insignificant, with it being picked up by a 9-mm-diameter N-52 REE magnet, and easily dragged by smaller N-52 magnets. The stone appeared eye clean, but microscopic observation revealed several small, scattered, whitish, breadcrumb-like inclusions as well as what appeared to be fine strings of partially dissolved needles.

Pink is one of the rarer colours of garnet, and is typically seen in either the hydrogrossular or pyrope-dominant varieties. EDXRF chemical analyses with an Amptek X123-SDD spectrometer revealed major amounts of Mn and Fe, minor Ca, and traces of Cr. Although Mg was below accurate detection levels for this instrument, electron microprobe analysis of five samples of this garnet by John Attard (Attard's Minerals, San Diego, California, USA) revealed major amounts of Mg in all of them. They consisted mainly of pyrope with variable spessartine and almandine, and a very minor grossular component.

Visible-range spectroscopy using an Ocean Optics USB4000 spectrometer with a 7-inch integrating sphere showed weak almandine absorptions at 503, 522 and 573 nm, as well as spessartine absorptions at 410, 423 and 430 nm (Figure 11). Infrared spectroscopy with a PerkinElmer Spectrum100 Fourier-transform infrared (FTIR) instrument revealed a significant water content. The various water-related peaks between 3560 and 3675 cm⁻¹ were consistent with OH absorption (Ogasawara et al., 2013).

Figure 11: The visible-range spectrum of a 'fleshy' pink sample of Mahenge garnet showed absorptions related to both almandine and spessartine.



This attractively coloured garnet is a welcome addition to the gem marketplace.

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Reference

Ogasawara Y., Sakamaki K. and Sato Y., 2013. Water contents of garnets from the Garnet Ridge, northern Arizona: H₂O behavior underneath the Colorado Plateau. American Geophysical Union, Fall Meeting, abstract #V23A-2754, <http://adsabs.harvard.edu/abs/2013AGUFM.V23A2754O>.