

that the major bands are shifted to 400 and 590 nm, resulting in a slightly greenish blue colour. Together with the fact that Cr and V were the only trace elements detected in these samples, this strongly suggests that both Cr³⁺ and V³⁺ are the colour-causing elements, rather than Fe²⁺-Ti⁴⁺ charge transfer. However, more analytical work needs to be done to confirm this hypothesis for the blue kyanite from this locality.

J. C. (Hanco) Zwaan

References

- Bell D.R., Rossman G.R., Maldener J., Endisch D., Rauch F., 2004. Hydroxide in kyanite: A quantitative determination of the absolute amount and calibration of the IR spectrum. *American Mineralogist*, **89**, 998–1003.
- Bosshart G., 1982. Blue colour-changing kyanite from East Africa. *Journal of Gemmology*, **18**(3), 205–212, <http://dx.doi.org/10.15506/jog.1982.18.3.205>.
- Henn U. and Schollenbruch K., 2012. Saphirblauer Disthen (Kyanit) aus Nepal. *Gemmologie: Zeitschrift der Deutschen Gemmologischen Gesellschaft*, **61**(3–4), 91–98.
- Pradat T. and Choudhary G., 2014. Gem News International: Gem-quality Cr-rich kyanite from India. *Gems & Gemology*, **50**(1), 87–88.
- Quinn E.P. and Laurs B.M., 2004. Gem News International: Kyanite from Tanzania. *Gems & Gemology*, **40**(4), 341–342.

Rainbow Moonstone from Malawi

Rainbow moonstone is a trade name that has been used for colourless labradorite (a plagioclase feldspar) that displays iridescent colours in the form of labradorescence. This phenomenal behaviour appears quite different from the billowy blue or white glow (adularescence) that is displayed by typical *moonstone* (alkali feldspar). Gem dealer Mark Kaufman recently encountered an old parcel of rainbow moonstone from an unusual locality—Malawi. According to him, Malawi has occasionally produced this material for several years, but the deposit has not proved economically viable due to the small amount of cuttable rough. Nevertheless,

some impressive stones have been cut, including a 28.8 ct gem (Figure 24). The parcel seen by Kaufman consisted of ~100 kg of rough, but only 2 kg were of facetable quality. The best stone that he has cut from this lot is a 12.22 ct cushion (Figure 25), which he loaned to Stone Group Labs for examination.

The gem showed pronounced spectral colours when viewed from all angles. The RIs of 1.553–1.566 (birefringence 0.013) were within the expected range for labradorite, and the hydrostatic SG was 2.69. A moderately strong chalky purplish pink fluorescence was observed

Figure 24: Malawi is reportedly the source of this exceptional 28.8 ct rainbow moonstone. Courtesy of James Zigras; photo by Jeff Scovil.



Figure 25: Bright iridescence is displayed by this 12.22 ct rainbow moonstone from Malawi, which was studied for this report. Photo by B. Williams.



under long-wave UV radiation and a weaker greenish yellow luminescence was seen under short-wave UV. This fluorescence behaviour is quite different from that reported for rainbow moonstone from other localities, including India (Johnson and Koivula, 1997), Madagascar (Ito, 2012) and Zambia (Win and Moe, 2012).

Inclusions are to be expected in this type of feldspar, with loupe-clean stones being rare. The only eye-visible inclusion in this stone appeared to consist of a small fracture oriented along a cleavage direction. Microscopic observation revealed lamellar twin planes with needle-like interfaces oriented parallel to the crystal axes. In addition, a tiny surface-reaching fissure appeared to be due to cleavage and contained minor polishing residues.

The distinctive UV fluorescence may help separate Malawi labradorite from other localities, although more samples will need to be examined to confirm this.

Cara and Bear Williams

Brendan M. Lours

References

- Ito C., 2012. Gem News International: Rainbow moonstone from Madagascar. *Gems & Gemology*, **48**(3), 223–224.
- Johnson M.L. and Koivula J.I. (Eds.), 1997. Gem News: Blue- and multicolor-sheen moonstone feldspar from India. *Gems & Gemology*, **33**(2), 144–145.
- Win W.L. and Moe K.S., 2012. Gem News International: Rainbow moonstone from Zambia. *Gems & Gemology*, **48**(2), 146–147.

Recent Smoky-Citrine Quartz and Tourmaline Discoveries at the Oceanview Mine, Pala, California, USA

During the past several years, a number of important gem-bearing pockets have been found at the Oceanview mine in Southern California, USA (e.g. Mauthner, 2011). These finds have yielded beryl (morganite and aquamarine), spodumene (kunzite and triphane), tourmaline and other minerals. Recently, mine owner Jeff Swanger and his crew have made some interesting discoveries of quartz and pink tourmaline. Since early 2013, a series of pockets have produced some large and clear quartz crystals with an attractive smoky-citrine colour. One of these crystals was polished by gem artist Lawrence Stoller to showcase its clarity and coloration (Figure 26). In addition, some large gemstones have been cut from this material, including a 1,030 ct Portuguese cut (Figure 27) and a 615 ct Mikan cut that was faceted by Philip Osborn, one of Oceanview's miners.

Most recently, in late July 2014, Swanger and his crew found a small pocket in a part of the mine known as Osborn Alley that contained pink tourmaline crystals with flat blue terminations (e.g. Figure 28). This find generated a lot of excitement since the crystals resembled the famous 'blue-cap' tourmalines found in 1972 at the Tourmaline Queen mine, also in the Pala District (e.g. Larson, 2012). So far, approximately three dozen of these tourmalines have been recovered—from both

Figure 26: This crystal of smoky citrine from the Oceanview mine was polished by Lawrence Stoller and measures 31 cm tall and 18 cm wide. Courtesy of James Zigras; photo by Gary Alvis and Lawrence Stoller.

