Spurrite from New Mexico, USA

Spurrite is a calc-silicate mineral with the formula $Ca_5(SiO_4)_2(CO_3)$ and a Mohs hardness of 5. It typically forms in contact metamorphic rocks (in particular, skarn deposits) as granular masses ranging from colourless to greyish violet (Bernard and Hyršl, 2004). The mineral has only rarely been used for lapidary purposes (e.g. purple beads and polished slabs or freeform pieces from Mexico and south-western USA; Koivula and Misiorowski, 1986; Wentzell, 2004).

During the 2015 Tucson gem shows, Mauro Pantò (The Beauty in the Rocks, Laigueglia, Italy) had faceted spurrite from Tres Hermanas Mountains, Luna County, New Mexico, USA (cf. Homme and Rosenzweig, 1970). He had 15 pieces that averaged 3 ct each (e.g. Figure 30). Pantò kindly donated one of the spurrites to Gem-A, and the gem was characterized by authors CW and BW.

The following properties were recorded from the 1.86 ct stone: colour—greyish lilac purple; diaphaneity—translucent; RI—approximately 1.67 (indistinct, using the bright line technique); hydrostatic SG—3.00; fluorescence—inert to long- and short-wave UV radiation; polariscope—aggregate reaction; Chelsea filter—light pinkish red; and no absorption features were visible with a desk-model spectroscope. These properties are consistent with those reported for spurrite in the literature, except that Wentzell (2004) documented faint 'cobalt'-blue long-wave UV luminescence in samples from Mexico. Microscopic examination revealed little other than minor surface-reaching fissures, grain boundaries typical of a polycrystalline material and a few tiny dark masses.

Figure 30: These translucent purple gemstones (3.14–5.73 ct) are spurrite from New Mexico, USA. Photo by Mauro Pantò.

Raman analysis using an Enwave L-Series spectrometer with a 785 nm laser gave a very good match to spurrite in the RRUFF database and in our own reference spectra. EDXRF chemical analyses using an Amptek X123-SDD instrument with a DP5 preamplifier showed that Fe was the main impurity, along with minor-to-trace amounts of Mn, Cr, Zn and Pb. The presence of small amounts of mineral impurities (such as carbonates) was documented by Wentzell (2004) in spurrite from Mexico. Minute amounts of mineral impurities also were present in our sample from New Mexico, as indicated by the anomalous trace elements and the tiny black masses.

Spurrite is dimorphous with paraspurrite, which has mostly overlapping gemmological properties but is known only from Inyo County, California, USA (Bernard and Hyršl, 2004).

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