Figure 16. The ferro-axinite contains "fingerprints" composed of orderly parallel inclusions. Photomicrograph by D. Beaton; field of view 4.8 mm.

Figure 17. Thread-like and irregular fluid inclusions are visible through the bezel of this ferro-axinite. Photomicrograph by D. Beaton; field of view 7.2 mm.

Electron-microprobe analyses (table 1) of one sample each of magnesio- and ferro-axinite showed similar compositions to those reported for these minerals by Jobbins et al. (1975) and Deer et al. (1997), except that the magnesio-axinite analyzed for this study contained somewhat more Mn (~2.0 vs. 0.4 wt.% MnO). The composition of the ferro-axinite closely resembled that of the material from Pakistan reported in the Fall 2007 GNI entry.

TABLE 1. Average electron-microprobe analyses of two axinites from Tanzania.[a]

Chemical composition	Magnesio-axinite 0.42 ct	Ferro-axinite 1.30 ct
Oxides (wt.%)		
SiO_2	43.84	42.97
B_2O_3 calc.	6.35	6.22
Al_2O_3	18.56	17.77
FeO	0.05	7.80
MnO	1.99	0.62
MgO	6.27	2.94
CaO	20.46	20.10
Na_2O	0.02	0.05
K_2O	0.02	0.04
H_2O calc.	1.64	1.61
Total	99.22	100.12
Ions per 16 (O,OH,F)		
Si	3.998	3.999
B calc.	1.000	1.000
Al	1.995	1.950
Fe^{2+}	0.004	0.607
Mn	0.154	0.049
Mg	0.852	0.408
Ca	1.999	2.005
Na	0.004	0.009
K	0.002	0.005
OH calc.	1.000	1.000

[a]*Average of five points per stone. Ti, Cr, V, Bi, Pb, Zn, and F were analyzed, but not detected.*

HyeJin Jang-Green (hjanggre@gia.edu)
and Donna Beaton
GIA Laboratory, New York

Brendan M. Laurs

William B. (Skip) Simmons and Alexander U. Falster
University of New Orleans, Louisiana

Baddeleyite from Mogok, Myanmar. Baddeleyite was first documented in faceted form in the Fall 2001 Lab Notes section (p. 212), as a 0.54 ct very dark greenish brown cushion cut that was represented as being from Sri Lanka. More recently, baddeleyite was recognized as a mineral associated with painite from Myanmar (unpublished data; see also Winter 2005 Gem News International, p. 356). Small quantities of baddeleyite from the Thurien-taung painite deposit in the western Mogok area have been faceted recently for gem collectors, according to Mark Smith (Thai Lanka Trading Ltd., Bangkok, Thailand). Mr. Smith reported that the rough baddeleyite is sometimes mixed in parcels of rutile, black amphibole, and schorl fragments, but it can be easily separated according to its higher specific gravity, as well as the distinctive bladed crystal shape and submetallic luster. The crystals are black (dark brown on a thin edge) and measure up to 2.5 cm long; some are intergrown with small red spinel crystals.

Since mid-2005, Mr. Smith has faceted nearly 100 pieces of the baddeleyite. The cutting yield is very low due to cracking and the thin bladed shape of the rough. Most of the stones were cut from broken crystals weighing 0.2–1 g. The shape of these pieces is most conducive to cutting flat rectangular stones. Most of the cut gems ranged from 0.2 to 3 ct, and a few weighed 5–6 ct. In addition, one exceptional faceted stone weighed 26.36 ct; it was cut from a broken piece of rough that was much larger than any other pieces Mr. Smith has seen.

Figure 18. These faceted stones (0.56–1.95 ct) are baddeleyite from the Thurien-taung painite deposit in Myanmar. Gift of Mark Smith, GIA Collection nos. 37141–37143; photo by Kevin Schumacher.

Mr. Smith donated three faceted stones (0.56–1.95 ct; figure 18) to GIA, and the following properties were determined: color—black, with no pleochroism; RI—over the limits of a standard gemological refractometer; hydrostatic SG—5.84–5.92; fluorescence—inert to long-wave UV radiation and very weak yellow-green to short-wave UV; and no spectrum visible with the desk-model spectroscope. These properties are consistent with those reported for baddeleyite in the Fall 2001 Lab Note, except that the Burmese stones were too opaque to view any color, pleochroism, or absorption spectrum. However, a reddish brown color was apparent with high-power fiber-optic illumination. Microscopic examination revealed numerous fractures, and small stringers of fine particles could be seen in the semitransparent edges of the stones.

The Burmese baddeleyite was produced as a byproduct of mining for painite, and Mr. Smith reported that it has become difficult to find rough baddeleyite in the Asian marketplace because of the decreased production of (and demand for) painite.

Editor's note: U.S. law covering import of Burmese gem materials was in the process of being reevaluated when this issue went to press. At the time GIA examined these stones, their import into the U.S. was permitted by existing law.

Eric A. Fritz and Brendan M. Laurs

Chrysocolla chalcedony from Iran/Armenia area. The majority of gem-quality chrysocolla chalcedony comes from Mexico and Arizona (e.g., Gem News, Spring 1992, pp. 59–60; Summer 1996, pp. 129–130). A new source reportedly was discovered recently in the border region between Iran and Armenia, according to Jack Lowell (Colorado Gem & Mineral Co., Tempe, Arizona). Mr. Lowell's supplier indicated that ~1,100 kg have been mined so far. Chalcedony has been previously reported from Iran (see Winter 2004 Gem News International, p. 337), but as adularescent material with a considerably paler blue color.

Mr. Lowell loaned two cabochons (8.86 and 3.17 ct) and a rough piece of the chalcedony to GIA for examination (figure 19). The following properties were obtained on the cabochons (with those for the larger cabochon given first here): color—green-blue and blue-green; diaphaneity—semitransparent to translucent; RI—1.54; hydrostatic SG—2.60 and 2.62; Chelsea filter reaction—none; fluorescence—inert to both long- and short-wave UV radiation. A 650 nm cutoff was observed with a desk-model spectroscope. Microscopic examination revealed spotty green

Figure 19. These samples of chrysocolla chalcedony came from a newly discovered source near the Iran/Armenia border. The cabochons weigh 8.86 and 3.17 ct, and the slab measures 5.5 × 3.7 cm. Courtesy of Jack Lowell; photo by Robert Weldon.