



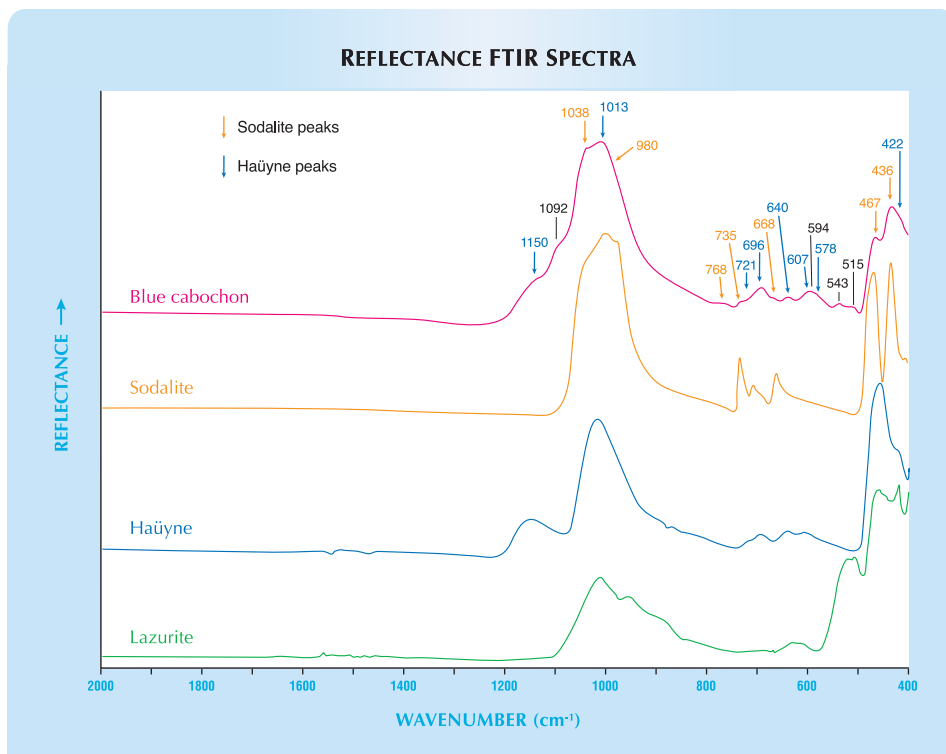
Figure 5. This attractive blue, 14.71 ct cabochon (sample no. FN-7692), reportedly from Mogok, appears to be a combination of massive haiüyne and sodalite. Note the strong zoned orange fluorescence to long-wave UV (right); the chalky blue spots correspond to the white areas seen in normal lighting. Photos by C. Grobon (left) and T. Hainschwang (right).

Massive haiüyne-sodalite from Myanmar. These contributors recently examined a 14.71 ct translucent blue cabochon (figure 5, left) acquired at the 2006 Tucson gem

shows, where it was represented as a mixture of haiüyne and sodalite. The seller, Mark Smith of Thai Lanka Trading Ltd., Bangkok, indicated that he had initially purchased such material several years ago. This sample was reportedly found in the Dattaw mining area, a few kilometers northeast of the center of Mogok. According to Mr. Smith, the material occurs as massive blue veins within a host rock of white calcite marble.

The color was a relatively homogeneous intense blue, with some thin white veins and some irregular white patches. The hydrostatic S.G. was 2.51, and the spot R.I. was around 1.50. The material showed strongly zoned orange fluorescence, with some chalky blue spots to long-wave UV radiation (figure 5, right) and a very weak red glow to short-wave UV. Microscopic observation revealed tiny inclusions with the appearance of pyrite. For the most part, these properties are consistent with haiüyne.

Figure 6. The specular reflectance FTIR spectrum of the 14.71 ct blue cabochon mainly indicated the presence of haiüyne, with some sodalite and a third unidentified mineral phase.



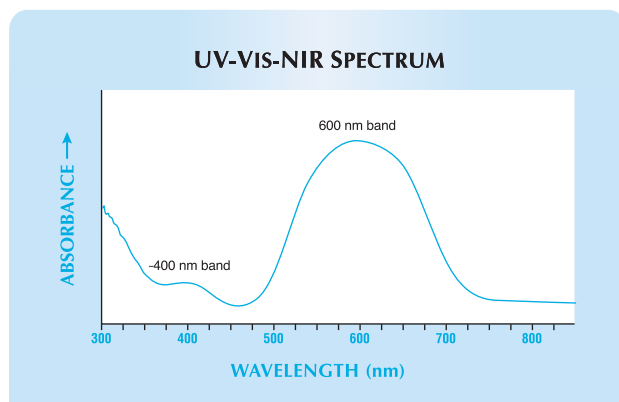


Figure 7. The UV-Vis-NIR spectrum of the h    ne-sodalite cabochon is characterized by a very strong and broad band centered at 600 nm and a weaker band at ~400 nm. This is quite similar to published spectra for h    ne. The spectrum was acquired by reflectance and converted to an absorption spectrum.

H    ne is a cubic silicate with the general formula $(\text{Na}_6\text{Ca}_2\text{Al}_6\text{Si}_6\text{O}_{24}(\text{SO}_4)_2)$ that is related to sodalite—which has the general formula $\text{Na}_8\text{Al}_6\text{Si}_6\text{O}_{24}\text{Cl}_2$ —along with the species lazurite and nosean. To identify the mineral(s) present in this cabochon, we recorded a specular reflectance FTIR spectrum. The spectrum showed features for both h    ne and sodalite, plus some additional unidentified peaks, although h    ne appeared to be the dominant mineral (figure 6). Unfortunately, our reflectance database lacks nosean, so we could not determine whether it was responsible for the additional peaks.

The UV-Vis-NIR spectrum revealed absorption bands very similar to those described by L. Kiefert and H. A. H  nni (“Gem-quality h    ne from the Eifel District, Germany,” Fall 2000 *Gems & Gemology*, pp. 246–253), with the main feature being a very broad band centered at 600 nm and a second weaker band at ~400 nm (figure 7).

EDXRF chemical analysis detected major amounts of Si, Al, K, and Sr, and minor Ca, Na, Cl, and S. These are all part of the chemical formula of h    ne (and also sodalite), with the exception of K and Sr. Minor amounts of K are known to occur in h    ne. The origin of the relatively high Sr content may be due to the material’s formation within a calcite host rock, which often contains Sr impurities.

Our analyses indicate that this attractive blue material is mainly massive h    ne mixed with other related mineral phases, one of which is most likely sodalite. The materials appear to be intimately mixed with one another and no particular distribution could be observed, even according to color. Although these minerals are closely related, these contributors are not aware of substantial solid solution between them, and therefore assume that the individual mineral phases are present. The white spots were deter-

mined to be the same material as the blue host, but this is not surprising since h    ne and sodalite are both known in colorless (or white) forms. In some of these white spots, accumulations of inclusions could be seen. These are most likely calcite, which explains the chalky blue luminescence of these spots to long-wave UV radiation.

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