

1. **Quartz** with white stripe. 5 x 7 cm. South Waziristan, Pakistan.



## FADEN QUARTZ OR QUARTZ WITH A WHITE STRIPE

Boris Z. Kantor,  
Russian Mineralogical Society  
boris\_kantor@mail.ru

**F**aden quartz is one of those oddities of the mineral kingdom that attract both because of their elegance and the mystery of their origin. When placed beside a “normal” crystal, they look like an imperfection. However, in the eyes of a mineral enthusiast this has a certain appeal as well, since there is no goal more desired by a mineralogist than solving an intrigue of nature’s complicated creations that we may mistake for fault or imperfection.

**The distinguished feature of the such quartz with a white stripe** is a nebulous white thread inside the crystal, usually 0.1 to 1 cm wide. It crosses the entire crystal or parallel grouping. It is called *faden*, German for ‘thread’, quartz. Both terms are also used in this article. Faden quartz is usually transparent, colorless or slightly yellowish, and has a distinct flat habit (*Figure 1*). The crystal sizes vary from a few centimeters to 12–15 cm, with half a meter tall giants (Hammer and Weerth, 2004) also known. Faden quartz comes from mineralized fissures in metamorphic rocks, so called Alpine-type veins. The fissures form during major tectonic events like continental plate collision accompanied by earthquakes and mountain building. In such cases, the rock is in a state of enormous lateral compression. The pressure is somewhat reduced inside the fissure gap, so it accumulates solutions that soak the rock and carry dissolved mineral components. Under reduced pressure, solubility drops and the excess of dissolved matter is deposited within the fissure as crystals of minerals. Grains of quartz from the host rock serve as crystal seeds. Oversaturation of the mineral-bearing solution is insignificant, therefore the velocity of crystallization is slow and perfect crystals grow on the fissure walls. That is why the Alpine-type veins are a source of the best specimens of quartz, albite, adularia, epidote, anatase, and brookite, all highly appreciated by collectors.

There are mineralized fissures of Alpine type in numerous regions of the world, including the Swiss Alps, Subpolar Urals, France, USA, and Canada. Until recently they served as important sources of piezoelectric quartz. Its high quality was caused by slow crystallization at moderate temperatures below the beta-alpha phase change, which helps to avoid transformation twinning. Today, the quartz deposits of Alpine veins have mostly lost their economic significance due to the development of high quality artificial piezoelectric quartz. As to faden quartz, the world mineral market is now supplied mostly from the northwest of Pakistan, near the Afghan border. The Pakistan specimens are notable for their big size, transparency and special elegance (Frazier, 2004).

Photos and Specimens  
by Boris Z. Kantor,  
unless noted otherwise