



Fungal Quartz Weathering: Piz Alv, Switzerland

Carolina Reyes (1) and Patrick Meister (2)

(1) University of Vienna, Dept. of Environmental Geosciences, Vienna, Austria (carolina.reyes@univie.ac.at), (2) University of Vienna, Dept. of Geodynamics and Sedimentology (patrick.meister@univie.ac.at)

Fungi are eukaryotes that can weather minerals by mechanical force, secretion of protons which dissolve minerals, and uptake of mineral components like Fe by organic chelators and siderophores (Smits et al. 2009). These exudates can destabilize minerals by changing the pH and redox conditions. They can be exuded into a liquid phase that separates the fungal cell wall and mineral or they can directly interact between the fungal cell wall and the mineral surface (Lee et al. 2007; Booneville et al. 2009). Fossilized fungi have been observed in rocks collected from a quartz lens located in the Triassic Hauptdolomit Formation of the lower Austroalpine Bernina Nappe near Piz Alv, Switzerland (Feldmann et al. 1997). The quartzite had been heavily eroded by SiO₂ dissolution and subsequent precipitation of needle-like goethite and hematite rosettes. Preliminary microscopic investigation identified the fungi as Basidiomycetes. The aim of our study is to determine if quartz rocks collected from Piz Alv contain fossilized fungi from the class Basidiomycetes using molecular techniques. Thin sections were first analyzed by light microscopy to discern fossil-like features. Scanning electron microscopy (SEM) with energy dispersive X-ray spectroscopy (EDX) was used on the same samples to characterize the types of elements present in samples. Results from light microscopy show filament-like structures. SEM/EDX results show the presence of boring holes in silicate material and iron bulbous encrustations.

References:

Feldmann et al. (1997) *Eclogae geol. Helv.* 90:541-556, Smits et al. (2009) *Fungal Biol. Rev* 23:122-131, Booneville et al. (2009) *Geology* 37:615-618, Lee et al. (2007) *Am. Mineral.* 92:1383-1394.