Abstract

The purpose of this thesis is to characterize the reaction of water with granite by describing the main factors, which control the weathering of granite. The effect of temperature on the dissolution of minerals turns to be the most significant. While the dissolution of feldspars occurs at lower temperatures, more resistant minerals such as quartz, biotite or muscovite are dissolved as well at higher temperatures. The presence of dissolved CO_2 affects dissolution as well as precipitation of minerals. The research done in this thesis also reveals that flowing of water in granite is limited only to joints and fractures, which can be filled by the clay minerals originated from the weathering of feldspars. In some cases, an opposite phenomenon may occur when highly permeable channels start to grow on faults. Mineralogical analysis of the insoluble residue obtained by dissolving aragonite sinter from spring Vřídlo in Karlovy Vary was performed. Abundance of quartz in, feldspar, mica, clay minerals, oxides and hydroxides of iron and to a lesser extent, baryte, magnetite and other minerals were identified by scanning Electron Microscopy (SEM) and X-ray Powder Diffraction (XRD). In most cases, it may be assumed this these relics of granite were carried out to the surface by thermal water. The well-crystallized baryte and iron oxyhydroxides may have precipitated from the solutions together with the sinter. Magnetite and potentially other minerals may imply additional rock sources.