

Geowissenschaftliches Kolloquium

Low-grade metamorphic overprint during late-stage Alpine exhumation



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The occurrence of zeolites in granites and gneisses may be new to most of us. Nevertheless, it is shown that they occur quite often in fissures of the Central Alps. Aqueous fluids circulating along fractures in the crystalline units react with the host rocks, forming a characteristic selvage zone, and finally precipitate a low-temperature mineral assemblage from an H₂O-dominated fluid. Construction of the new Gotthard rail base tunnel provided truly unique samples. Information about the late-stage exhumation and uplift can be deduced from the fissure assemblage apophyllite, laumontite, and quartz and by apatite fission-track analysis of vertical aligned samples. Once fissure minerals reach the erosion surface it interacts with (near-)surface waters and the original fissure mineral composition is adjusted by late-stage water-rock interaction.



Tobias Weisenberger studied at the University of Freiburg. In his Diploma thesis he worked on a classic zeolite locality in Iceland. During his PhD he studied the water-rock interaction and formation of zeolites species in the Swiss Alps. As Postdoc Fellow at The University of Texas at Austin he worked on fracture degradation in tight-gas sandstones plays in US. Since 2012 Tobias is on a lecture position at the University of Oulu, where his research is focused on hydrothermal ore deposits.

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