
Endogenous geodynamics in Geology

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The research group focuses on Petrology, mineral transformation and deformation in the Lithosphere. To model the pressure and temperature conditions of magma crystallization and metamorphism in the rocks, principle of thermodynamic equilibrium are used. The research further includes numeric modelling to understand formation of igneous textures and their rheological implication, evolution of state equation of fluid phases and their interaction in the subduction environments and finally their significance for geochemical cycles in the convergence boundaries. The microstructures and interaction of mantle and crust rocks, the emplacement of magma in the crust and large scale tectonic processes are also investigated. In this direction it includes various geodynamic environments, like the Bohemian Massif with high grade rocks, the Alpine orogenic belt, known for its thrust nappe system (Western Carpathians, Eastern Alps), the Collisional belt with thickened and double continental crust (Hindu Kush and Himalaya) and Central Asian Variscan Belt with multiple orogenic processes.

Selected outputs

- Dolejš D. 2013. Thermodynamics of aqueous species at high temperatures and pressures: equations of state and transport theory. - *Reviews in Mineralogy and Geochemistry* 76, 35-79.
- Faryad, S. W., Jedlička, R., Ettinger, K. 2013. Subduction of lithospheric upper mantle recorded by solid phase inclusions and compositional zoning in garnet: example from the Bohemian Massif. *Gondwana Research*, 23, 3, 944-955.
- Lexa, O., Schulmann, K., Janoušek, V., Štípská, P., Guy, A. & Racek, M., 2011. Heat sources and trigger mechanisms of exhumation of HP granulites in Variscan orogenic root, *Journal of Metamorphic Geology*, 29, 1, 79-102.
- Jeřábek, P., Lexa, O., Schulmann, K., Plašienka, D. 2012. Inverse ductile thinning via lower crustal flow and fold-induced doming in the West Carpathian Eo-Alpine collisional wedge. *Tectonics*, 31, TC5002, doi:10.1029/2012TC003097.