

## **DFG-funded PhD position at the University of Erlangen/Nuremberg (FAU) within the Graduiertenkolleg FRASCAL**

The Structural Geology and Tectonics (StrucTec) group at the Geocenter Northern-Bavaria is looking for an enthusiastic candidate for a PhD position within a large interdisciplinary group (FRASCAL) at the University of Erlangen/Nuremberg. The topic will be: **Modelling of the development of deformation bands in porous rocks and their influence on the permeability evolution of reservoirs.**

**Objectives.** The aim of the present project is to study the influence of initial rock properties (porosity, grain size and shape), deformation (compaction, shearing and combinations) and crack healing on the development of deformation bands. An extended DEM approach with multi-scale aggregates and healing algorithms will be used to study structures on the grain and single fault scale, whereas the reservoir scale flow properties will be determined with continuum models. **The aim is to develop a realistic multi-scale model for deformation bands and an advanced classification of their development.**

Supervisors will be Prof. Dr. Daniel Koehn (Tectonics) and Prof. Dr. Michael Zaiser (Institute of Materials Simulations). FRASCAL, Fracture across Scales is a research training group (RTG) integrating Mechanics, Materials Science, Mathematics, Chemistry, Physics and Earth Sciences managed by the Central Institute for Scientific Computing of FAU aiming to improve understanding of fracture in brittle heterogeneous materials by developing simulation methods able to capture the multi-scale nature of failure. Within the network the student will also attend “qualification days” covering mini lectures, soft skills training and RTG seminars.

We are looking for a Master in natural sciences or mathematics with a knowledge in Earth Sciences or Geophysics and a strong background in analytical and numerical capabilities. The project will involve the study of natural samples (potential field work) as well as the development and performance of numerical simulations across scales. We expect strong team building capabilities within FRASCAL and the StrucTec group at the Geocenter.

You will be part of an active group of researchers at the Geocenter and become part of the interdisciplinary FRASCAL group where you can improve analytical and numerical skills and open your horizon towards new disciplines and tools. Erlangen is a great, international and upcoming place to live in close proximity to Nuremberg, Munich, the Alps, as well as the Franconian karst and climbing areal.

FAU has a very good family program and many support programs for female researchers, we encourage you to apply to this position.

Please send the application including a motivation letter and a CV to [Daniel.koehn@fau.de](mailto:Daniel.koehn@fau.de) and feel free to ask any question. Deadline is the 1<sup>st</sup> of November, preferred starting date is 1<sup>st</sup> of January.