

The present mineral chemical and microstructural data form the basis for further quantitative PT-estimates, thermodynamic modelling and mineral dating.

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The Karcham Normal Fault: A new brittle structure in the Sutlej Valley, NW-Himalaya

C. Hager¹, C. Janda¹, B. Grasemann¹, E. Draganits¹, J.-C. Vannay², B. Bookhagen³, R. Thiede³

¹ *Institut für Geologie, University of Vienna, Vienna, Austria (a9504048@unet.univie.ac.at)*

² *Institut de Minéralogie et Pétrographie, Université de Lausanne, Lausanne, Switzerland*

³ *Institut für Geowissenschaften, Universität Potsdam, Potsdam, Germany*

The present tectonic situation in the Sutlej Valley is dominated by the active extrusion of a wedge-shaped metamorphic unit (Lesser Himalayan Crystalline Sequence, LHCS) between a floor thrust (Munsiari Thrust, MT) and a roof normal fault (Karcham Normal Fault, KNF). Evidences for neotectonic deformation in the Sutlej Valley are: (i) deformed Quaternary lake deposits (Draganits et al., 2001), (ii) seismicity, (iii) significantly younger cooling ages within the LHCS (Jain et al. 2000, Grasemann et al., 2001) and (iv) a number of hot springs. This poster presents fault-slip analyses, mainly from the KNF at the top of the LHCS wedge, giving an insight into the brittle/ductile history of this structure.

The KNF is a N-S trending normal fault within the Higher Himalayan Crystalline (HHC), 1000 m above the LHCS-HHC contact, which separates dynamically recrystallized mylonitic gneisses and quartzites in the footwall from statically recrystallized mylonitic high grade meta-sedimentary rocks in the hanging wall.

In the Sutlej Valley, the KNF is perfectly exposed along a road cut 200m upstream from the confluence of the Baspa and Sutlej Rivers.

The KNF is defined by an about 50 m thick zone of different lithologies, ranging from carbonates, mica-schists to graphite-pyrite bearing calcsilicates. Because of their different behaviour during brittle/ductile deformation, distinct layers of cohesive-cohesionless cataclasites and ultracataclasites can be distinguished. The fault zone is parallel to the foliation of the ductile MCT history that led to N-S trending, E dipping planes with NNE-NE dipping stretching lineations. Microstructures and different generations of slickenlines bear evidence for multiphase normal faulting which started at

the brittle/ductile transition zone and resulted in NNE-NE dipping lineations, whereas the younger lineations show a more E-ESE direction.

Extensional brittle deformation is not only found in the LHCS but is typical for the hanging wall of the wedge. Fault breccias and slickensides, mineralized with quartz, tourmaline and chlorite, indicate an overall NE-SW to W-E extensional regime, which corresponds to syn-sedimentary deformation structures in rock avalanche-dammed lake sediments near Sangla (Draganits et al., 2001).

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