

BGP-T8: Uranium enrichment along fault planes in the Sindreth basin, NW-India, inferred from in situ GR measurements - possible sources and pathways

Lina Anetzberger^{*1}, Ines Donhauser¹, Lars Scharfenberg¹, Michel Bestmann¹, and Helga de Wall¹

¹ Friedrich Alexander University Erlangen-Nürnberg, Geo-Center of Northern Bavaria, Germany

* lina-anetzberger@web.de

The Neoproterozoic Sindreth basin is a NNE-SSW trending graben structure in the western foreland of the Delhi Fold Belt. The basin is filled with Neoproterozoic clastic sediments and intercalated bimodal volcanics (basalts, ignimbrites, tuffs). During basin inversion the sequence has been tilted and faulted. Fault planes have been used as structures for emplacement of felsic dykes associated with the Malani Igneous Suite, one of the large felsic igneous provinces of the world. Between the lower clastic units and volcanoclastics/lava flows of the mafic volcanic unit fault planes have been identified which show coatings by Fe-rich mineralization and distinct enrichment of uranium (Scharfenberg et al. 2015). The U content is highest at the southern edge of the Sin-

dreth basin where values up to 50 ppm have been reported (Somani et al., 2004).

In order to get information on sources, pathways and causes for the enrichment of U, geochemical analysis of felsic dykes were done and thin sections from fault planes have been studied by scanning electron microscopy with energy dispersive X-ray spectroscopy (SEM-EDX). Fault planes show a network structure of micro cracks, which are filled by iron and manganese minerals, indicating that they have served as fluid pathways. Along discrete cracks, Ti-Fe-bearing minerals are altered and enriched in U. The Malani felsic dykes are considered as possible source rocks for the uranium.

References

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