

***In-situ* Rb-Sr geochronology in mica records multiple tectonic events in the same rock: A case study from Gianbul dome, NW Indian Himalaya**

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Gneissic domes have been reported all along the length of Himalaya in Higher Himalaya (Jessup et al., 2019). These domes constitute of a core of migmatites and leucogranites, flanked by metamorphic rocks which show a gradation from high- to medium-grade metasedimentary rocks towards the rim. Domes in Zaskar region (western Himalaya) remain enigmatic compared to domes in central and eastern Himalaya. Gianbul dome in SE Zaskar has both its northern and southern limbs exposed in Gianbul and Miyar valley, respectively. This work focusses on *in-situ* Rb-Sr geochronology in biotite and muscovite for the rocks exposed in Miyar valley which are bound by Khanjar shear zone (KSZ). Rocks exposed include Kade orthogneiss, metasedimentary rocks and leucogranites (Robyr et al., 2002; Robyr et al., 2006). KSZ is reported to have been active as a thrust fault up to 27 Ma, which caused peak metamorphism up to granulite facies, and was reactivated later as a normal shear that caused retrogression to greenschist facies (Robyr et al., 2006). Our dating approach reveals that muscovite in orthogneiss preserves in some cases pre-Himalayan ages (400-80 Ma), but also thrusting age (30-35 Ma). In contrast, biotite only preserves later normal shearing event (26-18 Ma). Biotite ages may further show different age peaks, interpreted here as different events during normal shearing and/or leucogranite intrusion related to the exhumation of the Gianbul dome. Our results highlight that deformation can reset Rb-Sr systematics in different mineral phases within a single rock, and that detailed geochronology can reveal a complete history of dome formation processes.

References

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