

## HiPeR特別セミナー (1)

### Syn-tectonic granite emplacement in a transpression shear zone: Insights from Phulad Shear Zone, Rajasthan, India

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Studies of granitic rocks in transpressional orogens indicate that tectonics may act as fundamental controls on the ascent and emplacement of the granitic rocks. It is therefore crucial to understand the spatial and temporal patterns of the fabrics within granites as well as their relationship with the structure of the country rocks in order to assess the process of granite emplacement in a region. In northwestern India, Phulad Shear Zone (PSZ, ~810 Ma) demarcates the boundary between South Delhi Fold Belt to the east and Marwar craton to the west. This shear zone has regional NE-SW trend with small bends of N-S orientations. PSZ is characterized by steep southeasterly dipping mylonitic foliation with steep oblique stretching lineation. The PSZ has developed in a ductile transpression with top-to-the-NNW reverse sense of movement associated with a component of sinistral-slip movement on horizontal section. The 200 by 6 km porphyritic Phulad granite occurs along and across the PSZ, and it is variably deformed. Phulad granite shows evidence of magmatic foliation with preservation of parallel alignment of euhedral feldspars phenocrysts and microgranitoid enclaves. The feldspar phenocrysts show simple twin interfaces parallel to the direction of elongation. This granite also shows development of solid-state foliation parallel to this magmatic foliation. Detailed study of structural elements suggests that Phulad granite has formed during the regional deformation in the country rock shear zone prior to its complete crystallization. EPMA U-Pb-Th monazite and U-Pb LA-ICP-MS zircon ages in Phulad granite indicate a magmatic age of  $819.1 \pm 4$  and  $818 \pm 18$  Ma, respectively. Our data indicate that the releasing bends of N-S orientation within the PSZ have provided the space required for emplacement of Phulad granite in a transpressional regime.