

## Geochemical characteristics of mafic and felsic igneous rocks (1.9-1.75 Ga) in the Lesser Himalaya: Regional variation and its implications for tectonic setting

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We present geochemical characteristics of mafic and felsic intrusive rocks (1.9-1.75 Ga) in the Lesser Himalaya and discuss about its tectonic setting. Rocks are taken from wide range of the Lesser Himalaya.

Models of tectonic setting for these rocks are controversial, which include subduction-zone setting (Kohn et al., 2010) and continental rift setting (Sakai et al., 2013).

Analyses of immobile trace element compositions suggest that mafic rocks (metagabbro) from the eastern Nepal have within-plate (or OIB) type composition, while the rocks from central and western Nepal have chemical compositions similar to subduction-related (active continental margin) basalt. It is noted that both types occur in the western Nepal. Based on these results, we suggest that plume-related rift system is more likely tectonic setting for these mafic magmatism than arc setting. Arc-like signature in western Nepal rocks may be derived from sub-continental lithospheric mantle.

Similar regional variation in trace element compositions for felsic rocks was observed. Initial  $^{143}\text{Nd}/^{144}\text{Nd}$  and  $^{176}\text{Hf}/^{177}\text{Hf}$  of felsic rocks are lower than those of mafic rocks; thus crustal component might involved significantly in generation of felsic magmas.

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