# TRACKING METASOMATISM WITH PHENGITE FROM THE UHP TSO MORARI TERRANE, INDIA

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Subduction zones are the primary sites of chemical exchange between the Earth's surface and interior. The release of fluids and silicate melts from the down-going slab results in mass transfer, element cycling, metasomatism, crustal melting, and can trigger earthquakes. Ultrahigh pressure rocks can preserve evidence of metasomatism in unique ways. The field samples from this study are from the Tso Morari UHP terrane in the Himalaya mountains of northwestern India. It is in a primarily quartzo-feldspathic gneiss with small, rare eclogite blocks. This area was created by a small chunk of continental crust that was subducted during the early stages of continental collision directly following an oceanic plate ophiolite sequence. As it was the first piece subducted during initial collision, the UHP continental crust may have been in the presence of subduction fluids from the oceanic slab creating a "wet" UHP environment. REEs and boron isotopic values can provide an indication of the extent of fluid infiltration in the continental mass and differentiate between high (subduction) and low (retrograde) pressure metasomatism. This study is uses samples along a 15 meter traverse to investigate metasomatism in Tso Morari. In this preliminary part of the study white mica (phengite and muscovite) is the primary mineral used because it is a hydrous, high pressure phase that characteristically contains boron when tourmaline is absent. Initial electron probe data has confirmed both high pressure phengite and retrograde lower pressure muscovite in the samples. The next steps will be to determine if the micas have distinct *in situ* $\delta_{11}$B concentrations. Previous studies suggest that the phengite would have low boron concentrations and highly negative $\delta_{11}$B values that are below the range of values expected by MORB basalts and the mantle.