PETROLOGY AND GEOCHEMISTRY OF MAGMATIC GNEISSES FROM THE WANNI COMPLEX, SRI LANKA

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Sri Lanka is composed of three main tectonic units: (1) Vijayan Complex; (2) Highland Complex; (3) Wanni Complex. The Vijayan Complex is exposed in the southeast of Sri Lanka and comprises mainly migmatitic orthogneisses with PT-conditions of 800 to 900 °C and 8-9 kbar (PETSCHNIG, 2015). The Highland Complex in central Sri Lanka experienced UHT metamorphism up to ~1150 °C at 8-12 kbar (SAJEEV & OSANAI, 2004). It contains a variety of different rock units which include marbles, calcsilicates, charnockitic gneisses, khondalites and migmatites.

The boundary between the Highland and the Wanni Complex extends from the southwest to the northeast of Sri Lanka and is not clearly defined. Along the southwestern border area cordierite bearing rocks are commonly found. In the central and northern parts of the Wanni Complex, magmatic orthogneisses with subordinate amounts of nearly undeformed granitoids dominate. The migmatic gneisses contain small grains of garnet and pyroxene and in some cases spinel within a matrix of potassium feldspar, plagioclase, quartz, and biotite. Sometimes cm-sized garnets occur. The metamorphic grade is thought to be lower compared to the Highland Complex. Garnet-pyroxene bearing gneisses allow to constrain the PT-conditions with 800-1000 °C and 7-9 kbar.

The orthogneisses display a mainly meta- to peraluminous granitic composition and follow a high-K calcalkaline to shoshonitic magmatic trend. Most samples fall into the volcanic arc granite (VAG) and syn-collision granite (Syn-COLG) fields according to the tectonic discrimination diagrams from PEARCE et al. (1984).

PETSCHNIG, P. (2015): Petrology of Granulite Facies Rocks from Sri Lanka. Master thesis, University of Graz.
PEARCE, J., HARRIS, N., TINDLE, A. (1984): Journal of Petrology, 25, 956-983.
SAJEEV, K., OSANAI Y. (2004): Journal of Petrology, 45, 1821-1844.