

## Preliminary studies of the Tseel Metamorphic rocks in southeastern Mongolia

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Mongolia is traditionally separated into southern and northern parts by the Main Mongolian Lineament (Badarch et al. 2007). The Tseel metamorphic terrane extends in E-W trend for 500 km at the southern part of the Main Mongolian Lineament. The Tseel terrane represents a chain of blocks (from west to east): the Bodonch, Uyench, Tseel and Tsogt blocks (Kozakov et al. 2002). Although it has been reported that this region were suffered from several igneous and metamorphic events, the tectonic evolution of the Tseel terrane is still unclear, and many researchers suggest different opinions such as back arc basin, active continental margin setting.

We show preliminary results of petrological study on metamorphic rocks from the Tseel block (N 45 20-50, E 95 40-55). This area is mainly composed of metasedimentary rocks (biotite, garnet-biotite gneisses, mica schists) originated from pelite and sandstones and metabasites (greenschist, amphibolite, garnet-amphibolite) originated from basalt and gabbro. Some intrusion of granite and gabbroic dikes are common in this area. However, the relationship between metamorphism and igneous activity remains poorly constrained. The metamorphic grade decreases toward the south in the study area. In the low-grade zones, the gabbroic dikes preserved the clear relic of clinopyroxine and plagioclase involving igneous activity, and some are replaced by epidote, albite, chlorite, amphibole and muscovite.

In the highest-grade zones, metapelites contain garnet, biotite, cordierite, sillimanite, plagioclase, Fe-Mg amphibole, and quartz with some accessory minerals including ilmenite, apatite. Chlorite and muscovite are also found as the retrograde products. Garnet occurs as porphyroblast with size of 0.1 - 10 mm and contains inclusions of quartz, biotite and cordierite. Garnet shows almandine-rich homogeneous compositions (Grs 3-5, Alm 65, Sps 2-15, Prp 15-25), with slight zoning characterized by Mg increase and Mn decrease from core to rim. Amphibolite with and without garnet occurs as dikes, containing garnet, hornblende, Fe-Mg amphibole, quartz, plagioclase. We will present the spatial distributions of mineral assemblages in the study area, and the results of the analyses of P-T histories.

### References

- Kozakov, LK, Glebovitsky, RVA, Bibikova, EV, Azimov, PY, Kirnozova TI (2002) Doklady Earth Sciences, 7, 82-87.  
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