

Sandstone petrology of the Permian Altan-Ovoo formation in the Hentey Range, central Mongolia

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The Permian Altan-Ovoo formation is the major member of the Hentey Range in the Central Mongolia. In this abstract we present geotectonic settings, source rocks, and its composition of the Altan-Ovoo formation. The Hentey Range is located in the northern part of the Adaatsag terrane and in the eastern part of Haraa terrane (Badarch, 2002), formerly known as Mongol -Okhotsk zone, is located in the central part of the Central Asian Orogenic Belt (CAOB). Altan -Ovoo formation conformably overlies Carboniferous to Permian Gorkhi formation (Dorjsuren, 2012) and conformably covered by the Lower Triassic Orogchin Uul formation.

Samples collected from the study area include 56 sandstones, 17 siltstones and 24 gravelstones. We have examined sandstone samples under microscope. The size of mineral and rock fragments varies from 0.06 mm to 2.2 mm. Argillite, andesite, dacite, rhyolite particles are predominant among rock fragments, there are rarely noticed siltstone, tuff, schist fragments. These rock fragments show variable textures such as porphyritic, microlitic, microfelsitic, aleurolitic, microgranophyric and microgranolepidoblastic textures. Hornblende, quartz, plagioclase, K-feldspar are identified as mineral fragments. The feldspar clasts are altered into sericite, rarely epidote. Accessory apatite, sphene, zircon, monazite, tourmaline, allanite are found.

We have classified sandstones according to the methods of Folk (1968) and Dickinson (1985), and most of them fall in the fields of lithic arkose and arkose. The ternary Qt-F-L plot by Dickinson (1985) suggests that most samples of Altan-Ovoo formation were supplied from dissected arc and transitional arc. Result of major elements geochemical analysis of three samples suggests that they are from active continental margin.

It can be concluded that rock and mineral fragments of the Permian Altan-Ovoo formation were supplied from various source areas. Among them, arkose deposited in active continental margin originally supplied from volcanic rocks of the continental magmatic arc is significant.

Keywords: Altan-Ovoo formation, Mongolia, arkose, sandstone