

PRELIMINARY RESULT OF PETROCHEMICAL COMPARISON OF GRANITOIDS OF THE MANDAKH AREA IN SOUTH MONGOLIA

*Undarmaa Batsaikhan¹, Munkhtsengel Baatar², Batkhishig Bayaraa², Burenjargal Ulziiburen², Noriyoshi Tsuchiya¹

1. Graduate School of Environmental Studies, Tohoku University, 2. School of Geology and Mining Engineering, Mongolian University of Science and Technology

The Mandakh granitoids in southern Mongolia is part of the Central Asian Orogenic Belt, a vast accretionary orogen that records the opening and closer of the Paleo-Asian Ocean in the late Proterozoic to Palaeozoic. Our research area is located in Mankdakh soum of Dornogovi province in the southeast Mongolia. In the around Mandakh area, several granitoids, such as the Narin khudag, the Bronze fox, the Mandakh, the Mogoit, the Budar and the Shuteen, show different age several from early Carboniferous to Permian.

The previous researchers have studied some intrusive bodies, for example the Narin khudag, the Bronze fox, the Mandakh (James H.S.Blight et al., 2010), Shuteen (Batkhishig, Iizumi, 2001). However, no detailed analyses of other granitoid complexes have been carried out, therefore, we studied petrochemical properties of granitoids (Bronze fox (ca. 10 km²), the Budar (ca. 42 km²), the Mandakh (length stretched around 45 km), the Mogoit (ca. 40 km²)). The Harmagtai-Hongoot-Oyut and Tsagaan suvarga Cu-Mo porphyry ore bodies which were identified are distributed in and around the area as Middle Carboniferous to Early Permian and late-Devonian respectively.

The Mandakh complex contains porphyritic structure granite and granodiorite but the Mogoit and The Bronze fox intrusions composed from granite and quartzmonzonite, have medium (5-10mm) and coarse (>10mm) grained textures, that vary from equigranular to crystal-crowded porphyritic. The samples collected from the Bronze fox, the Budar, the Mandakh, the Mogoit complexes consist of ca 3-5 mm- long euhedral plagioclase phenocrysts that are strongly altered to sericite. The groundmass contains 2-3 mm biotites and interstitial quartz. Additionally, a medium-grained granitoid densely packed with subhedral 3-5 mm K-feldspar phenocrysts, which have an apparently poikilitic and perthitic texture. Accessory minerals include apatite, sphene and zircon. Intrusive rocks are immersed by K alteration and sericite-chlorite alteration assemblages.

The complexes of Mandakh area composed from high calc-alkaline, I-type. Furthermore those plutons are silica saturated SiO₂ 66 %, high Al₂O₃ 14.4 %, Na₂O+K₂O>6 %, Y25 ppm, Nb 12.3 ppm, Rb 150.1 ppm, formed within an island arc setting.

Porphyry Cu-Mo deposits and occurrences are associated with typical calc-alkaline metaluminous, oxidized, I type, magnetite series granitoids, which is dominated granitoid type in Mongolia (Gerel. O., et al). The petrochemical figure of granitoids of the Mandakh area is commonly similar to the Carboniferous Shuteen Complex which is petrochemically similar to adakite-type rocks.

Keywords: Mongolia, granitoid of Mandakh, Central Asian Orogenic Belt