Geochemistry and geochronology of grantoid rocks in south Mongolia: Implications to copper porphyry metallogeny

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Granitoid rocks are wide spread in whole territory of Mongolia. They vary in composition, age and formed in various geodynamic setting. Some of granitoid rocks show very close spatial and temporal relationship with typical ore mineral regarding to their time and geodynamic setting. We studied geochemistry and geochronology of granitoid rocks, which show close special and temporal relation with porphyry type mineralization distributed in south Mongolia. Our study includes thirty granitoid bodies from five porphyry deposits (Nariin khudag, Kharmagtai, Khul morit, Shaliin khudag and Khatsavch) and eighteen porphyry occurrences (Bronze fox, Ikh Shankh, Davaa ull, Javkhlant etc). The result indicates that rocks have subalkalic affinity with medium to high potassium calc-alkaline feature. On tectonic discrimination diagram all plots within subduction tectonic setting. The U-Pb measurements on zircon were conducted using LA-ICP-MS at Kyushu university. Result of U-Pb measurement shows that age of rocks vary from 302.1±3.1 Ma (Ulaan tolgoi occurrence) to 370.7±4.1 Ma (Bunkhan khudag occurrence), which can be roughly divided into three main age span as Late Devonian, Early and Late Carboniferous. Age of granitoid rocks in Edrene and Baitag terrane are similar and show narrow time span ranging from 317.5±3.7Ma (Olonbulag deposit) to 327±3Ma (Shalyn khudag deposit). Result of this study is vital importance for further study of Central Asian Orogenic Belt as well as reconstruction of paleo geo environment and related porphyry mineralization.