

**Geochemistry and geochronology of the intrusive rocks related to the Ruwai Zn-Pb-Ag skarn deposit, Central Borneo, Indonesia**

C. D. P. Dana (Akita Univ.), C. K. Lai (Brunei Darussalam Univ.),  
A. Agangi, R. Takahashi (Akita Univ.), A. Idrus (Gadjah Mada Univ.)  
and N. A. Nainggolan (PT Kapuas Prima Coal, Tbk.)

Ruwai mining complex is Indonesia's largest Zn-Pb skarn deposit and is located within Central Borneo metallogenic belt. Several intrusion bodies occur in this area and shows clear cross-cutting relationship with the skarn bodies, whereas some other intrusions are not. Thus, the genetic link between the intrusions and skarn remains unclear. Moreover, since the previous study about their geochemical characteristics is limited, the petrogenesis and tectonic setting is still not well understood. In this study, we provide detailed petrographic observation combined with whole-rock geochemical data in order to characterize the intrusions and understand their genesis and tectonic setting. Several representative samples were selected for U-Pb zircon dating to fully understand the geochronology of the magmatism related to the formation of skarn deposit in this area.

Mineral paragenesis and geochemical characteristics consistently indicate that there are at least three different facies of intrusive rocks observed in this studied area including felsic (i.e. granodiorite and monzonite), intermediate (i.e. diorite and diorite porphyry) and mafic (i.e. dolerite) intrusions. Generally, all the intrusions in this studied area have sub-alkaline affinity and mostly metaluminous. All the samples of intrusive rocks show relatively similar trace and rare earth elements (REE) patterns. Negative Eu anomaly is observed in only altered granitoids including silicified granitoid and altered diorite porphyry. The zircon U-Pb dating indicates that there were three main magmatism in this area, i.e., diorite-microdiorite intrusion (144.4-105 Ma) and dolerite dyke (101.3 Ma) in Early Cretaceous, diorite and granodiorite intrusions (100.07-90.4 Ma) in Late Cretaceous, and diorite intrusions (9.88-9.47 Ma) in Late Miocene.

In terms of geochemical characteristics, the intrusions in the study area are similar to Mesozoic granitoids around Schwaner Mountains but slightly different from the common Fe-Zn skarn related intrusions. The geochemical discrimination suggests that the intrusions in this area were formed in continental arcs setting as the result of subduction of the Paleo-Pacific plate right after the accretion of SW Borneo block to the Sundaland. The mafic dyke that cross-cut the skarn bodies is regarded as a post-mineralization intrusion, thus all intrusions later than this mafic dyke are also regarded as post-mineralization intrusions. Therefore, it is inferred that the intrusion responsible to the formation of the Ruwai skarn deposit is dioritic intrusions with Early Cretaceous age.