

Preliminary Investigation of Petrography and Geochemistry on the Plutonic Rocks in the Loei Fold Belt, Northeastern Thailand

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Permo-Triassic plutonic rocks from the Loei Fold Belt, northeastern Thailand, were studied. The aim of this work is to document petrographic and geochemical characteristics of the intrusions that are associated with Au-Cu deposits. The Loei Fold Belt is a ~800-km-long, NS-trending fold belt that hosts several epithermal and skarn Au-Cu deposits. Petrographic analysis of the granodiorites shows that the rocks consist mainly of quartz (20-20%), plagioclase (30-35%), hornblende (10-20%), biotite (10-15%), and orthoclase (0-10%). Orthoclase has been identified from samples in the Loei area. Accessory minerals (5-10%), such as sphene, zircon, magnetite, and ilmenite, are also present. Magnetic susceptibilities of granitoids vary from 0.01×10^{-3} to 11.1×10^{-3} in SI unit in the Loei area, from 0.07×10^{-3} to 9.9×10^{-3} in the Petchabun area and 0.02×10^{-3} to 2.8×10^{-3} in the Chantaburi area. These intermediate to felsic plutonic rocks are geochemically calc-alkaline, and moderately enriched in light rare earth elements (LREE), with distinct Eu anomalies, showing characteristic I-type signatures. On the diagrams of Rb versus Y/Nb and Nb/Y, our data show that these plutonic rocks are continental volcanic-arc granitoids. K-Ar dating of orthoclase from granodiorite in the Loei and Nakhon Sawan areas yielded ages of ~171 and ~221 Ma, respectively. In contrast, hornblende from a diorite in Lopburi yielded a K-Ar age of ~219 Ma. Pyrite from limestone and skarn deposit in Loei area has a $\delta^{34}\text{S}$ values of -9 to +1‰.