

Petrochemistry of Plutonic Rocks along Loei Fold Belt, Northeastern Thailand

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Petrography and geochemistry of Permo-Triassic plutonic rocks from different provinces along the Loei Fold Belt, northeastern Thailand were studied. The Loei Fold Belt is an 800-km north-south trending fold belt that hosts an epithermal Au and several skarn Cu-Au deposits. Petrographic analysis of the granodiorites, diorites and granites in the area shows that the rocks consist mainly of quartz, plagioclase, hornblende and biotite. Orthoclase feldspars has been noted from samples in the Loei Province. Accessory minerals such as magnetite and ilmenite were also present. Magnetic susceptibilities of granitoids vary from 0.01 to 11.14×10^{-3} SI in the Loei Province, from 0.07 to 9.9×10^{-3} SI in the Petchabun Province and 0.02 to 2.81×10^{-3} in the Chantaburi Province. Concentrations of major elements suggest that these intermediate to acid igneous rocks have calc-alkaline affinities. Trace element geochemistry upon normalization to chondrite shows moderately elevated LREEs and relatively flat HREEs, with distinct depletion of Eu. Plotting concentrations of Rb versus Y/Nb and Nb/Y in tectonic discrimination diagrams for granitoids show that the rocks formed in volcanic-arc setting. New age data from radiometric K-Ar dating of orthoclase from granodiorite in the provinces of Loei and Nakhon Sawan yielded ages of 171 and 221 Ma, respectively. Age data of hornblende separated from diorite in Lopburi Province yielded ages of 219 Ma. Sulfur isotope data of pyrite separated from limestone and skarn deposit in Wang Saphung, Loei Province, show negative values of $\delta^{34}\text{S}$ (CDT) from -9 to +1‰. The sulfur isotope values suggest that the magma had been influenced by light biogenic sulfur from local country rocks.

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