The Proterozoic igneous rocks in western South Korea

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The Neoproterozoic igneous rocks occur scattered along the western coastal region of the South Korea, with a NNE trend. These igneous rocks lie in between the Paleoproterozoic metamorphic rocks and meta-sedimentary rocks, and the Paleozoic meta-sedimentary rocks in the Hongseong, Dangjin and Hwaseong areas. This study is focusing on mainly geochemical characteristics of the Neoproterozoic igneous rocks and Paleoproterozoic meta-igneous rocks which including para-gneiss bearing limestone in the Dangjin area.

The Neoproterozoic igneous rocks have the composition ranging from gabbro-diorite to granite-alkali granite in total alkali versus silica (TAS) diagram, and their SHRIMP zircon U-Pb ages range from 800±27 to 832±10 Ma. The whole-rock geochemistry analysis of these granitoids and basaltic rocks indicate that they are VAG + syn-COLG and tholeiitic basalt, respectively.

The Paleoproterozoic granite gneisses and amphibolites show composition range from gabbro to granodiorite in TAS diagram. SHRIMP zircon U-Pb ages of these rocks range from 1855.1±7.8 to 1868.6±7.8 Ma. The whole-rock geochemistry analysis of the amphibolites indicate that these rocks are within-plate basalt and MORB.

The relationship between the Neoproterozoic and Paleoproterozoic meta-igneous rocks is still in great dispute. Considering parallel geological distribution of the Paleoproterozoic metamorphic rocks, the Neoproterozoic igneous rocks and the Paleozoic meta-sedimentary rocks along the western coastal region of the South Korea with a NNE trend from east to west, maybe there are big event between the Paleozoic and the Mesozoic Era.