

PETROGRAPHIC CHARACTERISTICS AND ORIGIN OF ENCLAVES IN THE WONHYOSAN GRANITE, YANGSAN CITY

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The granites distributed in the Kyongsang basin contain enclaves which are distinguished from the host rocks, and many of them are known as mafic microgranular enclaves. The origin of these mafic microgranular enclaves can be divided into four hypotheses: (1) rock fragments from country rocks; (2) cumulation of the early crystals or disruption of early chilled borders in host felsic magma; (3) magma mingling; and (4) restite.

These mafic microgranular enclaves can also be easily found in the granites around Mt. Wonhyo, Yangsan city. They are sharp contacts with the granites, and have ellipsoidal shape and phenocrysts which might be originated from the host rocks. Under the microscope, oscillation zoning, hornblende-mantled quartz, rapakivi texture, and acicular apatite are observed. These properties indicate that the enclaves are blobs of quickly chilled mafic magma when it is mixed with felsic magma. The other evidences supporting magma mingling are as follows: (1) similarity of the compositions of the rim of plagioclase in the enclave and granite; (2) linear trends of the major elements on the Harker diagrams; (3) ΣREE versus SiO_2 variation showing the two different slopes; and (4) textural and compositional variations from rim to core in zoned enclaves. The mafic end member of the enclave is regarded as the aphyric basaltic andesite in Mt. Sinbul-Youngchui area. The granites around Mt. Wonhyo experienced the magma mingling process which was occurred by the injection of mafic magma, at about 70 Ma, during magmatic fractional crystallization. The equigranular granites and the micrographic granites in the study area are considered to be the products after the magma mingling process.