

Occurrence and Geochemistry of Kimcheon Granitic Rocks in the inner Yeongnam Massif of South Korea

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The area of this study is located in the southern Kimcheon area and inner Yeongnam massif of South Korea. The area is mainly covered with Precambrian gneisses from both western and eastern sides, and Jurassic Kimcheon granitic rocks which intruded into the gneisses. The field surveys and modes show that they are grey in color and coarse to medium grained, and can be divided into two parts, marginally located granodiorite(Gd) and centrally located granodiorite.

They have gradational relations, and Gd shows more frequent and larger mafic enclaves than that of Ggd. They show prominently parallel foliation caused by the Kimcheon granitic magma flowage at the western and northeastern margins. They consist of quartz, plagioclase, alkali feldspar, biotite, \pm hornblende, apatite, sphene, epidote, allanite, opaque and so on.

From the representative samples of Gd and Ggd, the K-Ar biotite ages of Gd and Ggd were early Jurassic from $197\pm 3\text{Ma}$, $200\pm 3\text{Ma}$ and $207\pm 3\text{Ma}$, respectively, suggesting their emplacement age was probably late Triassic. The chemical compositions indicate they were subalkaline, acidic to intermediate, and metaluminous to peraluminous.

The relationships of SiO_2 vs. major elements and trace elements, the ternary diagrams of AMF and Ba-Sr-Rb, and the K-Ar biotite ages suggested that they were fractionally differentiated from a single granitic magma body at its margin and inward. The relation of modal ($\text{Qz}+\text{Af}$) vs. Op, K_2O vs. Na_2O , ACF ternary diagram and Rb/Sr vs. K/Rb showed that they were magnetite-series and I-type granitic rocks formed by the progressive melting of fixed sources. The tectonic setting belonged to VAG of the continental margin.