

## **The Evolutions of the Cretaceous volcanic and granitic rocks in the Southern coastal region of the South Korea**

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The Cretaceous volcanic rocks and granites along the southern coast of the Korean peninsula are very broadly distributed in the east-west direction. This area is a very long area of 210 km long, and is a region in which Cretaceous sedimentary rocks were deposited in unconformity on the Proterozoic gneissic rocks and the Cretaceous volcanic rocks intruded or erupted. This area is divided into four zones from west to east, and age of volcanic rocks and granitic rocks of each zone is shown through zircon U-Pb dating to compare the stratigraphic relationships for each zone. In addition, magma evolution was compared with the tectonic background of volcanic rocks in each zone from the petrochemical data of major elements and trace elements in volcanic rocks. The geologic ages of volcanic rocks and granitic rocks are in the range of  $86.6 \pm 1.7$  to  $73.3 \pm 1.5$  Ma in Zone A, and most of the volcanic rocks belong to sub-alkaline series, and show compositional variations ranging basaltic andesite-dacite-rhyolite. In Zone B, ages are in the range of  $84.86 \pm 0.73$  to  $75.32 \pm 0.58$  Ma, and most of the volcanic rocks belong to calc-alkaline series, and it is similar to volcanic rocks associated with subduction-related primitive arc magmatic environment in continental margin (Kim et al., 2015). The ages of rocks in Zone C are in the range of  $85.3 \pm 1.2$  to  $57.2 \pm 1.1$  Ma and the most of the volcanic rocks belong to the sub-alkaline series. Ages of rocks in Zone D ranged from  $88.95 \pm 0.44$  to  $70.7 \pm 3.5$  Ma and the most of volcanic rocks belonging to the calc-alkaline series and volcanic rocks have close petrotectonic affinities with orogenic suite and subduction-related volcanic arc (Hwang et al., 2018).

Cretaceous volcanic rocks and granites, which are very broadly distributed in the east-west direction along the southern coastal region of the Korean peninsula, are almost simultaneously and spatially erupted or intrusive in terms of age dating data, and based on geochemical analysis, these rocks were formed under the subduction-related primitive arc magmatic environment in an active continental margin.