

Geochemistry for the mafic volcanic rocks from the Korean Tertiary basins

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1. Introduction

Several volcanics are found within the Tertiary sedimentary basins, southeastern part of Korea. The sedimentary basins have been interpreted to have formed in the framework of separation of the East Sea. The volcanics are Eocene or Early and Middle Miocene in ages, showing a distinct chronological gap, and show mafic and silicic (bimodal) in composition. The Miocene volcanics were regionally and stratigraphically grouped into two varieties along the Hyeongsan fault; younger volcanics (13.6–15.2 Ma, K) from the north of the fault, erupted after the opening of the East Sea, and older volcanics (16.2–21.1 Ma) from the south of the fault. This study provides new geochemical data for the mafic volcanics from the Tertiary sedimentary basins, southeastern part of Korea.

2. Methods

Samples are collected from the Guryoung peninsula, Pohang, Janggi, Eoil and Haseo sedimentary basins, southern part of Korea. Fresh samples are chosen from each locality. The samples were analysed for the major and trace elements by ICP and ICP/MS of ACTLABs, Canada.

3. Results

The volcanics from the Pohang basins are characterized by the olivine phenocryst as a major phenocryst while the those of the Guryoung peninsula, Janggi, Eoil and Haseo basins have plagioclase as a major phenocryst. The former is characterized by high magnesium ratios ($=100 \cdot \text{Mg}/(\text{Mg} + \text{Fe}^{2+})$, 59–65), low CaO and high TiO₂, Na₂O, K₂O, P₂O₅ contents. The former has mugearite and benmoreite composition, and shows alkalic, strongly alkaline series, and "Within Plate Basalt"-like characteristics. The latter is basaltic andesite and andesite-like, and show subalkalic, tholeiitic composition and "Arc Basalt"-like characteristics. In the incompatible element contents, the alkalic volcanics show high HFS (Rb, Ba) and LFS (Zr, Th, Hf) contents and enriched REE pattern.

Key Word: Tertiary Sedimentary Basins, Mafic Volcanics, Geochemical data

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