

## **Petrological insights into magmatic processes and evolution characterization for Quaternary Balerang and Rajabasa Volcanoes, Lampung-Indonesia**

REZA FIRMANSYAH HASIBUAN\*, TSUKASA OHBA

Earth Resource Science, Akita University, Akita 010-8502, Japan

(\*E-mail: m9015019@wm.akita-u.ac.jp)

Balerang and Rajabasa are Quaternary volcanic complex located in the Sunda arc where the Indo-Australian plate is currently subducting beneath Eurasian plate. The Sunda arc is well known as an active volcanic region. Balerang and Rajabasa volcanoes are located along the same north-south volcanic lineament with the most active Krakatau volcanic complex. This volcanic lineament is an extensional fractures zone which Great Sumatran Fault terminates at this lineament due to change of subduction angle from nearly perpendicular to oblique. This highly dynamic zone is estimated giving a substantial influence to the magmatic activity within Balerang and Rajabasa volcanoes. As minerals respond texturally and compositionally to a changing magmatic environment, we investigate the mineral textures and zoning to decipher these processes. For whole rock analysis, silica contents range from 55.19 to 66.24 wt.% indicating a chemical heterogeneity of magma. Some plagioclase crystals consist of highly sieve core and clear rim regions, and overgrowth on the plagioclase and pyroxene crystals, indicating a magmatic recharge event. Reverse zoning and resorption textures associated with compositional step zoning or progressive zoning are quite common as well in clinopyroxene and plagioclase crystals. By considering to those evidences, we conclude that injection of a hotter basaltic magma into colder and more felsic magma occurred beneath the volcanoes. Furthermore, we also investigate the evolution of these volcanoes by integrating field observation, geochemical study, and detailed volcanostratigraphy. Then we elucidated that this volcanic complex has sequentially erupted from 4 different vents of which the shifting was strongly influenced by active dextral Great Sumatran Fault. Balerang magma has undergone a reversal evolution from dacite to basaltic andesite. On the other hand, in late Holocene Rajabasa magma is nearly constant between andesitic to dacitic.

**Keywords:** balerang, rajabasa, petrology, magmatic process, volcanic evolution