

GSU023-P03

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## Study of the volcanic rocks from the Pohnpei Island, Western Pacific

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The island of Pohnpei is the greatest island among the Caroline island group in the Western Pacific with an area of about 338 square km. It is located on the 6 degrees 54 minutes N and 158 degrees 14 minutes E, about 800 km north from the equator. This volcanic island is a part of an eroded portion of massive volcanic edifice of a shield volcano with fringing outer coral reefs and the lagoon. The average height of the island ranges from 700 to 800 m. The volcanic rocks of the island consist of alkali olivine basalt, basanite, and basanitoid. The present structure of the island represents several geographical features that the island had suffered through the history such as huge volcanism, diastrophism, and erosion. We carried out petrographical and mineralogical work on the volcanic rock samples collected from the island of Pohnpei. From preliminary petrographic study the volcanic rocks can be classified into three major rock types such as alkali olivine basalt, basanite, and basanitoid. Most of the volcanic rocks are aphanitic to phaneritic in texture and are composed of olivine, clinopyroxene, micro plagioclase, titanomagnetite and minor nepheline in a fine ground mass of olivine, plagioclase, alkali feldspar, and nepheline. Phenocrysts of olivine are common surrounded by a fine-grained ground mass. One sample of basanite contained harzburgites xenolith with large crystals of olivine and pyroxene, indicating mantle cumulate origin. The age of the volcanic activity of those rocks is presumed to be different from the difference between the chemical compositions of studied rocks samples. By carrying out detailed petrography and textural features of the volcanic rocks, we can understand the geochemical evolution and structural setup of the Pohnpei Island.

Keywords: Pohnpei Island, Western Pacific, Alkali basalt, Volcanic activity, Geology, Petrology