

Chronological constraints on Paleoproterozoic strata in Gabonese Republic

*Yusuke Sawaki¹, Tomohiko Sato¹, Hisashi Asanuma¹, Shuhei Sakata², Takafumi Hirata²

1.Tokyo Institute of Technology, 2.The University of Tokyo

The Paleoproterozoic is one of the most important periods through the Earth history and is characterized by numerous geological events such as emergence of eukaryote, Snowball Earth, and rise of oxygen level in the ocean-atmosphere system. Recently macroscopic structures, which can be interpreted as colonial organisms by some researchers, have been reported from Paleoproterozoic sedimentary rocks in Gabonese Republic. Many kinds of geochemical proxies in the sediments have been measured in order to decipher surface environment at that time. In spite of their importance, chronological constraints on the rocks are still insufficient. Previous workers reported Rb-Sr isochron ages of intrusive syenites and zircon U-Pb ages from basement gneisses. The errors and uncertainties of the Rb-Sr isochron ages, however, were over 100 million years. The previous study of the zircon U-Pb age was devoid of description of internal structures in zircons under a cathode-luminescence observation, therefore the metamorphic age of the basement gneiss has not been evaluated in a rigorous manner. We got some syenite rocks and a powdery sample prepared from a basement gneiss from research collaborators in Gabonese Republic. The syenites are mainly composed of K-feldspar and aegirine, and include quartz, siderite, and fluorite as accessory minerals. SEM-EDS observation demonstrates that fluorine is also enriched in the aegirine. In addition to that, the alkaline elements-rich chemical compositions of the syenites imply that these rocks belong to A-type granite. We tried to separate zircon grains from the syenites, but could identify little zircons. On the other hand, many subhedral zircons were picked up from the powdery sample. Under the cathode-luminescence observation, many zircon grains show oscillatory zoning from core to rim, except for metamictized parts. Newly grown metamorphic rims could not be identified in these zircon grains. We will present the preliminary results and advances for more precise chronological constraints on sedimentary ages of Paleoproterozoic strata in Gabonese Republic.

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