Late Permian plume-related magmatism and tectonothermal events in the Kontum Massif, central Vietnam

*Masaaki Owada[1], Yasuhito Osanai[2], Nobuhiko Nakano[2], Tatsuro Adachi[2], Ippei Kitano[2], Tri Van Tran[3], Hire Kigali[4]

1.Graduate School of Science and Engineering, Yamaguchi University, 2.Department of Earth Sciences, Kyushu University, 3.General Department of Geology and Minerals of Vietnam, 4.raduate School of Science and Technology, Niigata University

The Kontum Massif is situated in the southern part of Trance Vietnam Orogenic Belt (TVOB), central Vietnam. The massif consists of various kinds of metamorphic rocks including ultrahigh-pressure/ultrahigh-temperature metamorphic rocks and intrusive rocks. While the geochronological data indicates two tectonothermal events (480 –420 Ma, 270 –240 Ma), the intense metamorphic and magmatic activities occurred during Late Permian –Early Triassic as a result of the continental collision between South China and Indochina cratons. In this study, geochrological analyses for three samples (2 metagabbros and 1 charnockite) were conducted with zircon U-Pb LA-ICP-MS dating. The zircon dating gave a magmatic age range of 260 –250 Ma for the three samples and an inherited age of ~1400 Ma for the charnockite. The magmatic ages were found to be identical with those of peak metamorphic periods in the Kontum Massif. These results combined with Nd isotopic data for the granitic rocks and pelitic gneisses from the Kontum Massif suggest that the massif may have been derived from a reworked continental crust. Geochemical features of the metagabbros reveal that the parental basaltic magma corresponds to the Song Da igneous suite situated in the northern part of TVOB, and has been assimilated by crustal materials. The Song Da igneous suite is a member of Emeishan large igneous province, and has been derived from the Late Permian mantle plume. It is concluded that the plume-related magma has intruded into the deeper part of Kontum Massif, and led the ultrahigh-temperature metamorphism by acting as a heat source.

Keywords: metagabbro, mantle plume, zircon U-Pb dating, Late Permian, Kontum Massif

©2016. Japan Geoscience Union. All Right Reserved.