AOGS 2006

Geochronology, Geochemistry and Nd Isotopic Study of Neoproterozoic Amphibolites in Central Korea: A Preliminary Report

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Global-scale collisional orogeny during the Meso- to Neoproterozoic resulted in the amalgamation of ancient continental fragments to form the Rodinia supercontinent. Since about 820 Ma, this supercontinent may have started to break up, possibly in association with a mantle plume which initiated continental rifting. This report will present our preliminary result on geochemical and geochronological characteristics of two Neoproterozoic amphibolite bodies in South Korea, particularly in order to test their possible linkage with the Rodinia breakup. Precambrian basement in the Korean peninsula consists, from north to south, of the Nangrim, Gyeonggi and Yeongnam massifs. The Nangrim and Gyeonggi massifs are divided by a Phanerozoic fold-thrust belt, known as the Imjingang belt. Various tectonic models suggest that the Yeongnam and Nangrim massifs are correlative with the North China block. On the other hand, Neoproterozoic magmatism recently reported in the Gyeonggi massif lends a possibility that this massif can be correlated with the South China block, because Neoproterozoic rift-related magmatic rocks concomitant with the Rodinia breakup are widespread in South China. Neoproterozoic amphibolites of massive or layered types are exposed at two localities: One in the Chuncheon area of the Gyeonggi massif and another in the Yeoncheon area belonging to the Imjingang belt. Previous workers have reported on trace element and isotopic geochemistry, including the ca.850 Ma Sm-Nd whole rock age of the Chuncheon amphibolite. On the other hand, a precise SHRIMP zircon age of 861±7 Ma is available for the Yeoncheon amphibolites. We investigated geochronology, geochemistry, and Nd isotope systematics of both amphibolites, in order to provide information on the precise timing, tectonic setting and source characteristics of Neoproterozoic magmatism. In particular, we test the applicability of high-quality zircons from the Yeoncheon area as an international standard material for future U-Pb spot analysis. We also discuss the tectonic significance of the Neoproterozoic amphibolites with relation to the Rodinia breakup and Triassic continental collision between the North China and South China blocks. We are now in the process of collecting geochemical data and the result will be given at the presentation.