REE and Sr isotope geochemistry of apatites from the Yeongju and Andong granites, Yeongnam massif, Korea

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Yeongju and Andong granites are found at the northeastern part of Yeongnam massif, Korea. Lee et al. [1] reported initial Sr ratio of 0.71505±0.00026 (267±27Ma Rb-Sr whole rock age) for the Yeoungju granite, 0.70944±0.00011 (361±41Ma) for the Andong granite. It was known that two granites were emplaced in the crust deeper than any other Phanaerozoic granite in the South Korea [2]. Tsuboi and Suzuki[3] suggesetd that the $^{87}Sr/^{86}Sr$ ratio of magmatic apatite could be considered as a reliable indicator of initial $^{87}Sr/^{86}Sr$ ratio in the host granite.

In this work, we analyzed REE abundance, Sr isotopic ratio from the granites and its constituent minerals apatite and biotite in order to know the evolution histroy for the source magma of the Yeongju and Andong granites.

The chondrite nomalized REE patterns of the apatites from the Andong granite show LREE-enriched shape with slightly positive Eu anomaly or no-Eu anomaly. However, the REE patterns of the apatites from the Yeongju granites show relatively flattened REE pattern with negative Eu anomaly. And the $^{87}Sr/^{86}Sr$ ratio of the apatite from the Andong granite is 0.70978, which is lower than $^{87}Sr/^{86}Sr$ ratio (0.71528) of the apatite from the Yeongju granite. Our Sr isotopic data from the apatites show a good correspondence with previous study[1], which sugegests that the source magma of the Andong granite was formed from a primitive material compared to that of the Yeongju granite.

[1] Lee et al. (1999) Geochem. J. 33, 153-165. [2] Hong (2001) J. Petrol. Soc. Korea, 10, 36-55. [3] Tsuboi and Suzuki (2003) Chem. Geol. 199, 189-197.