

## Rare earth element compositions of Neogene plutonic rocks, North Fossa Magna, Japan

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Neogene plutonic rocks are distributed in North Fossa Magna (NFM), and consist of mainly quartz diorite. Chino, Shimosuwa, Wada, Matsumoto, Utsukushigahara and Yori bodies, Ueda, Horikiri and Myoutoku-Yonago bodies and Makihatayama, Tanigawadake and Akayu bodies expose in Utsukushigahara-Kirigamine (UK), Suzaka-Ueda (SU) and Makihata-Tanigawa (MT) areas, respectively. It is considered that these plutonic rocks in NFM are derived from upper mantle, since they are characterized by low  $K_2O/Na_2O$  ratio and Tin content (Ishihara et al., 1976).

In chondrite normalized REE patterns, the Chino and Shimosuwa bodies in UK area have weak negative Eu anomalies, whereas others in same area show no anomalies. The Matsumoto, Wada and Chino bodies are characterized by LREE enrichment. All bodies in UK area have relatively constant patterns of HREE, but the Wada body has low HREE contents. The Myoutoku-Yonago body in SU area has weak negative Eu anomaly, and is characterized by LREE enrichment. All bodies in SU area have also relatively constant patterns of HREE. The Makihatayama and Tanigawadake bodies in MT area have negative Eu anomalies, and show right downward sloping patterns of LREE and constant patterns of HREE.  $La/Sm_N$  and  $La/Yb_N$  ratios of all bodies in three areas increase with decreasing  $SiO_2$  contents. It suggested that LREE concentrated to residual magma and change of HREE was small.  $Eu/Eu^*$  ratio of those slightly decreases with decreasing  $SiO_2$  contents, and the rocks in UK area have higher ratios of  $Eu/Eu^*$  than those of SU and MT areas.

The plutonic rocks distributed in respective areas have peculiar features of REE, suggesting that they have different origin and magma process.

Keywords: North Fossa Magna, Neogene, plutonic rock, rare earth element