Oslo Rift geochemistry: the earliest intrusives

ERIKSEN, Z. T.[1], JACOBSEN, S. B.[1], LARSEN, B. T.[2]

[1]Department of Earth and Planetary Sciences, Harvard University, Cambridge, MA 02138, USA

[2]Department of Geosciences, University of Oslo, Norway

The Permo-Carboniferous Oslo Rift is recognized as a premier locale for continental rift-related alkaline volcanism. The geochemistry and isotope systematics of the earliest extrusives are well described in the literature [1; 5], but description of the earliest intrusives remains incomplete. Microsyenitic sills termed 'mænaites,' have been age-dated through U-Pb methods between 304 – 294 Ma, defining the earliest magmatic phase associated with the Oslo Rift [3]. Mænaites often occur with a poorly-described suite of lamprophyric intrusives termed 'camptonites.' It has been suggested that camptonites are co-genetically related to mænaites [4], although the temporal and geochemical relationship between the two intrusives remains unconstrained.

Here we report preliminary elemental data from a porphyritic camptonite collected near Gran, Norway. Sample CGJ-02 was retrieved from a lamprophyric dike located near a prominent gabbroic plug. Total-alkali-silica (TAS) classification categorizes CGJ-02 as a basalt. Relative to OIB and MORB compositions, CGJ-02 has low Al_2O_3 (10.83 wt%) and high MgO (10.58 wt%) and CaO (12.95 wt%). Primary magmatic carbonates are ubiquitous in the groundmass. Sample CGJ-02 exhibits fractionated REE trends (PM-normalized Gd/Yb = 3.02) similar in slope to the spatially associated gabbroic plug. Future geochemical and isotopic analysis of a total of three camptonites and two mænaites will help elucidate the relationship between the earliest intrusives of the Oslo Rift.

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