Geophysical Research Abstracts,
Vol. 10, EGU2008-A-02356, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-02356
EGU General Assembly 2008

Anomalous compositional profiles across small mafic dykes of the Åland-Åboland dyke swarm, SW Finland

S. Chistyakova (1) and R. Latypov (1, 2)

1. Department of Geosciences, University of Oulu, Oulu, Finland (2) Geological Institute, Kola Science Centre, Apatity, Russia, (sofya.chistyakova@oulu.fi/Fax: +358 85531484)

Detailed cm-scale sampling across two diabase small dykes (7 and 21 cm thick) of the Åland-Åboland dyke swarm has revealed a well-developed internal zonation, with surprisingly systematic compositional variations. From the margins inwards the dykes exhibit a steady decrease in whole-rock MgO, Mg#, and normative Opx (indicating a normal fractionation trend) with simultaneous increase in normative An and decrease in incompatible Zr and TiO2 (indicating a reverse fractionation trend). The dykes are almost glassy and uncontaminated by host rocks, suggesting that their compositional profiles are primary and most likely reflect temporal changes in composition of magma filling the dykes. A mechanism responsible for the systematic changes in composition of inflowing magma remains, however, illusive since no known processes are able to force magma to evolve simultaneously along both normal and reverse fractionation trends. The study appears thus to indicate some not yet specified process of magma differentiation.