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Mobilization of K in shock-metamorphic plagioclases

Hammerich*, S.A., Trieloff, M.
*Institute of Earth Sciences, Im Neuenheimer Feld 234-236, 69120 Heidelberg, Germany,
s.hammerich@stud.uni-heidelberg.de

In order to check the possibility of a mobilization of K due to shock metamorphism, three plagioclase separates were examined using secondary electron microscopy (SEM) and electron microprobe (EMP). One of the samples was an un-shocked reference sample, the others shocked at 22 and 34 GPa [1].

The K content of the plagioclase separates decreased with increasing shock pressure. In the shocked samples, K-rich –probably glassy- phases were found that do not occur in the unshocked sample. These observations can be reconciled with ^{40}Ar - ^{39}Ar age data of plagioclase separates that have K/Ca spectra with K/Ca phases both higher and lower than unshocked plagioclase values.

A mobilization of K seems likely, but the observations could also be due to sample heterogeneity of samples selected for the shock experiments.

[1] Trieloff, M. (1993) Inaugural Dissertation, Ruprecht-Karls-Universität, Heidelberg

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