

SHRIMP-II U-Pb dating of perovskite from ultramafic-alkaline intrusion

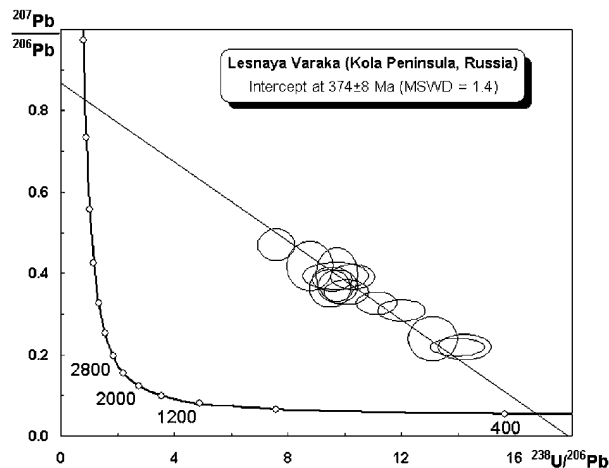
D.I. MATUKOV E.N. LEPEKHINA E.A. BAGDASAROV
A.V. ANTONOV AND S.A. SERGEEV

Centre of Isotopic Research, VSEGEI, St. Petersburg, Russia;
shrimp@vsegei.ru

Precise dating of alkaline ultra basic rocks is required for resolving individual pulses of magmatism, and for studying the dynamics of continental rifting and plume-lithosphere interaction, but the approach to accurate dating of such rocks is not well established. In spite of presence of perovskite in such rocks there are no ages based on perovskite measurements.

In this study we used for dating fine perovskite grains extracted from alkaline-ultramafic rocks from Lesnaya Varaka intrusion, Kola Peninsula (Russia). Perovskite grains were separated from there matrix, hand-picked and then cast into epoxy resin disc. Samples were analysed using the SHRIMP-II ion microprobe according the procedure described in [1]. The 462 Ma perovskite from scarn of Tazheran complex, Lake Baikal area, was used as a standard. For this purpose classical U-Pb ages were obtained for Tazheran, which gave 458 ± 5 Ma in good accordance with previous results. SHRIMP-II meticulous study of Tazheran gives 461 ± 8 Ma and excellent concordance.

Perovskite from Lesnaya Varaka reveals much lesser U content and much bigger proportion of common Pb then Tazheran. But nevertheless SHRIMP-II results generate good mixing line in Tera-Wasserburg coordinates with lower intercept at 374 ± 8 Ma (see Figure). So we have straight evidence of suitability of perovskites for dating of alkaline-ultramafic rocks.



References

- [1] Ireland T.R. et al (1990) *EPSL* **101**, 379-387.