

RETENTION OF RADIATION DAMAGE IN ZIRCON XENOCRYSTS FROM KIMBERLITES, NORTHERN YAKUTIA

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We have studied zircon xenocrysts (that are assumed to originate from lower crustal or upper mantle rocks) from kimberlites from the Kuoika and Ary Mastakh fields in Northern Yakutia. Kimberlite formation has occurred ca. 150–230 Ma ago (compare also GRIFFIN et al., 1999). Our SHRIMP (Sensitive High Resolution Ion MicroProbe) analyses yielded much older, generally concordant U–Pb ages (Fig. 1), which excludes notable U–Pb resetting during kimberlite formation. Also, zircon grains were found to be significantly more radiation-damaged than would correspond to damage accumulation only since the time of kimberlite formation (cf. NASDALA et al., 2001). This observation contradicts the hypothesis that high temperatures during kimberlite events will cause complete structural reconstitution of zircon xenocrysts, by thermal annealing of the accumulated radiation damage.

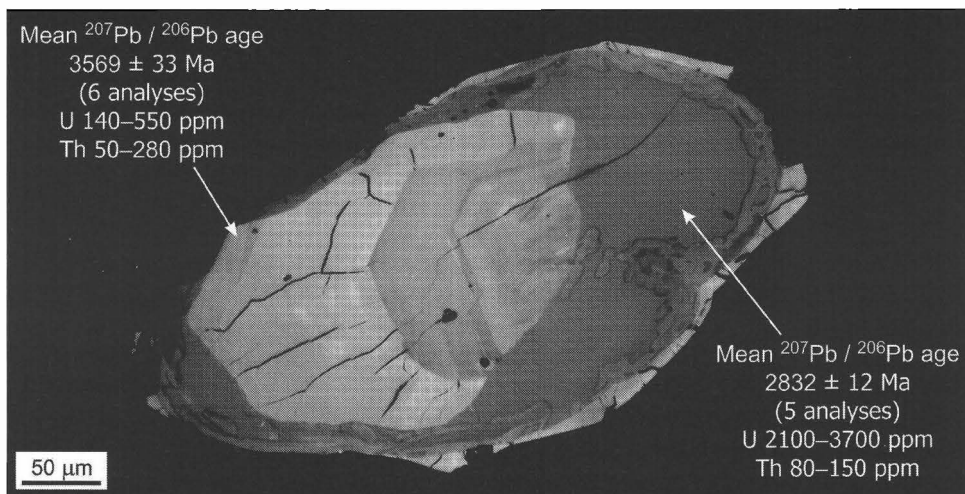


Figure 1. Zircon xenocryst (embedded in epoxy and polished; reflected light image) from the Bargadymalah pipe, Ary Mastakh field, Northern Yakutia, showing a complex internal texture. The zoned core (high reflectance) is partially radiation-damaged whereas the U-rich interior region (dark grey) is fully metamict.

GRIFFIN W.L., RYAN C.G., KAMINSKY, F.V., O'REILLY, S.Y., NATAPOV, L.M., WIN, T.T., KINNY, P.D., ILUPIN, I.P. (1999): *Tectonophysics*, 310, 1–35.

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