

PRECISE Rb - Sr AGES OF SIBERIAN KIMBERLITES

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Yakutian Kimberlite Province (YKP) in the northeastern part of the Siberian Platform contains several hundred kimberlite bodies (pipes, dykes and plugs) grouped into 21 kimberlite fields. Available Rb-Sr ages of these bodies (Brakhfogel, 1984) cluster around 360-340, 230-210 and 150-130 Ma. However, ages within a single field differ widely and no kimberlite magmatism temporally coincident or slightly prior to the Siberian basaltic volcanism dated precisely at 248 ± 2 Ma (Renne and Basu, 1993) has yet been found. In view of recent suggestions (Haggerty, 1994) about correlation between kimberlite activity and thermal plumes from the core-mantle boundary, we report here precise Rb-Sr ages of several kimberlite bodies from the YKP based on the recently reported technique of analysing acid-leached phlogopites separated from kimberlites (Brown et al. 1989).

Three kimberlite bodies occurring within the same West Ukukit field give identical ages of 409 ± 8 Ma, 407 ± 8 Ma and 409 ± 15 Ma indicating that at least in this field kimberlite emplacements were sharply contemporaneous. However, the initial Sr ratio (Sr_i) at 0.7085 ± 1 and 0.7054 ± 2 are distinctly different. One pipe each from the two southern the Malo-Botuobia and the Alakit fields give 327 ± 7 Ma ($Sr_i = 0.7088 \pm 1$) and 371 ± 7 Ma ($Sr_i = 0.7033 \pm 3$) respectively. Only one pipe analysed from the western most the Kharamay field gives an age 245 ± 6 Ma coincident with the age of Siberian basaltic eruption at 248 ± 2 Ma (Renne and Basu, 1993). The age of a single sample from the Beriginda field northwest of the West Ukukit field is the youngest at 149 ± 17 Ma.

So the new and precise results clearly indicate four epochs of kimberlite activity in the YKP centred at 400 ± 20 Ma, 360 ± 20 Ma and 250 ± 10 and 150 ± 10 Ma, which fall within two long periods of reverse geomagnetic polarity (superchrons) and one short period of normal polarity (subchron) (Haggerty, 1994). The existence of kimberlite intrusive pulses older than 400 Ma and in between the above periods remains to be verified.

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