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Recurrent magmatic activity on a lithosphere-scale structure:
crystallization and deformation in kimberlitic zircons

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ABSTRACT

Kimberlites are not only the most economically important source of diamonds; they also carry unique information encapsulated in rock fragments entrained as the magma traverses the whole thickness of the lithosphere. The Nurbinskaya pipe in the Siberian kimberlite province (Russia) is one of several intruded along the Vilyui Rift, a major terrane boundary. The pipe contains three populations of mantle-derived zircon xenocrysts: Archean (mean age 2709 ± 9 Ma), Devonian (mean age 371 ± 2.3 Ma), and a subset of grains with evidence of brittle deformation and reheating, and a range of ages between 370 and 450 Ma. The Hf-isotope, O-isotope and trace-

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