

Abstract Submitted
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Modification of apparent fission yields by Chemical Fractionation following Fission (CFF) CHARLES HOHENBERG, ALEX MESHNIK, Washington Univ. — Grain-by-grain studies of the 2 billion year old Oklo natural reactor, using laser micro-extraction^{1,2}, yield detailed information about Oklo, a water-moderated pulsed reactor, cycle times, total neutron fluence and duration, but it also demonstrates Chemical Fractionation following Fission. In the CFF process, members of an isobaric yield chain with long half-lives are subject to migration before decay can occur. Of particular interest is the 129 isobar where 17 million ¹²⁹I can migrate out of the host grain before decay, and iodine compounds are water soluble. This is amply demonstrated by the variation of Xe spectra between micron-sized uranium-bearing minerals and adjacent uranium-free minerals. Fission 129 yields for the spontaneous fission of ²³⁸U generally come from measured ¹²⁹Xe in pitchblend², ores replaced by aqueous activity, and are incorrect due to the CFF process. ²³⁸U yields for the 131 and 129 chains, reported in Hyde³, as 0.455 +/- .02 and < 0.012, respectively, the latter being anomalously low. ¹A Meshnik, C Hohenberg and O Pravdivtesva, PRL 93, 182302 (2004); A Meshnik Sci. Am. Nov (2005), 55; ²E K Hyde, Nucl Prop of Heavy Elements III (1964).

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