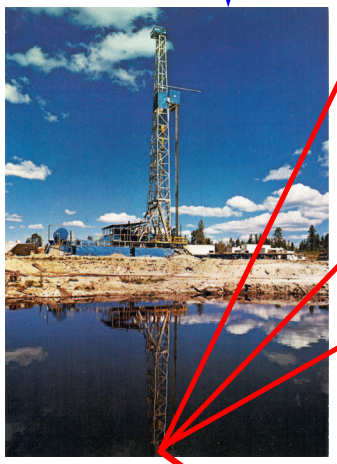
Abstract # V32C-1047

Precambrian zircons yield a helium diffusion age of 6,000 years

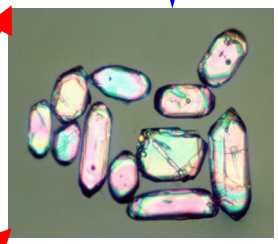
D. Russell Humphreys,* Steven A. Austin,* John R.Baumgardner,† Andrew A. Snelling ‡

* Institute for Creation Research, San Diego, CA, U.S.A. † Los Alamos National Laboratory, Los Alamos, NM, U.S.A. ‡ Geo-Research Pty Ltd, Springwood, Qld, Australia

From a deep borehole, we extracted zircons and measured their ^{4}He.



Los Alamos geothermal site
Borehole GT-2, 4310 meters
Biotite Granodiorite
Fenton Hill, New Mexico



50 to 75 µm long

Pb / Pb Age : 1.5 Gyr

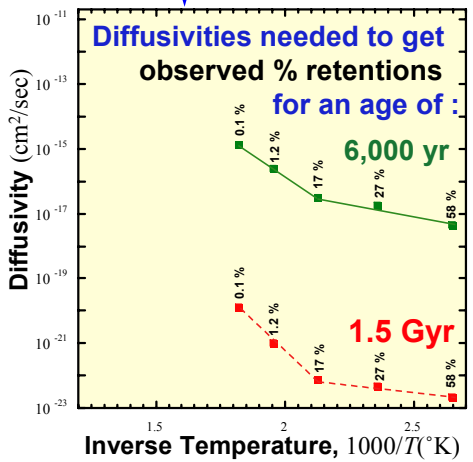
SEM image of zircon

Sample	Depth (meters)	Temp. (°C)	Helium (%) †
2002	750	95	~ 80
1	960	105	58
2003	1490	125	42
2	2170	151	27
3	2900	197	17
4	3500	239	1.2
5	3930	277	0.1

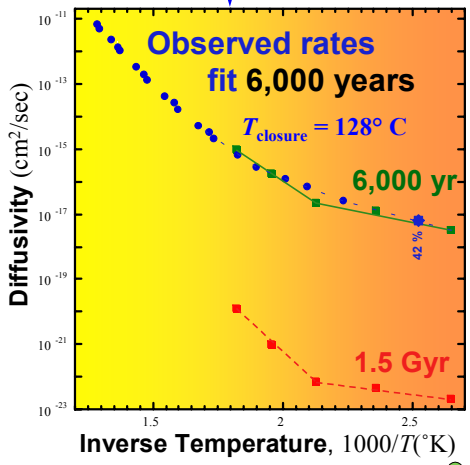
† % radiogenic ^{4}He retained

1-5: Gentry *et al., GRL* 1982
2002-3: Our measurements

We predicted diffusion rates, and then measured them.



Vardiman *et al.*, 2000. *Radioisotopes and the Age of the Earth*, p. 348.

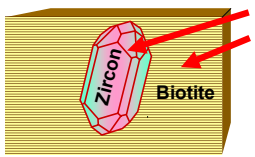


Helium Diffusion Age:
6,000 ± 2,000 years

Note: Rock temperatures for samples 2 - 5 were well above the closure temperature of 128° C

^{4}He is diffusing *out* of zircons into biotite

Helium measured at 1490 m depth:

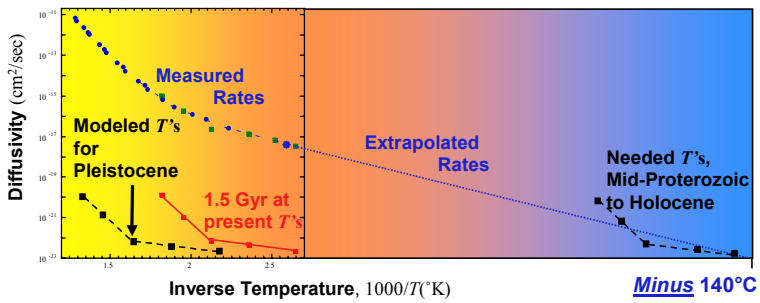


zircon: C = 1320 nmol / cc
biotite: C = 7 nmol / cc

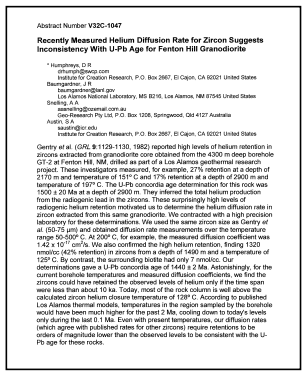
$C_{zircon} >> C_{biotite}$

Diffusion from greater to lesser C

1.5 Gyr would require *cryogenic* temperatures !



Abstract



Technical article at www.icr.org/research