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Evidence for prolonged magmatism on the eucrite parent body.

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^{182}Hf-^{182}W isotopes and rare earth element (REE) concentrations in zircon grains from six eucrite samples were investigated using a Cameca 1280 ion microprobe, in order to constrain the duration of magmatism on the eucrite parent body, perhaps 4 Vesta. Zircon grains within a eucrite sample have variable ^{180}Hf/^{184}W and ^{182}W/^{184}W values indicating the occurrence of distinct zircon generations resolved in age. Observed individual growth intervals of zircon grains are between 4523 (+6/-12) Ma and 4555.4 ± 0.7 Ma. Thus, zircon grains crystallized relatively late, when ^{26}Al was ineffective as a heat source. This requires that early formed magma(s) survived sufficiently long deep inside the parent body. Chronological and chemical results imply that magmatism on the eucrite parent body was complex and lasted for at least ~45 Ma after the formation of Ca,Al-rich inclusions, which is in agreement with the thermal models (e.g., [1,2]) and twice as long as previously thought (e.g., [3,4]).

[1] Gupta, G & Sahijpal, J. (2010) Geophys. Res.115, 1-15 [2] Gosh A. & McSween H. Y. Jr. (1998) Icarus 134,187-206 [3] Srinivasan, G. et al. (1999) Science 284, 1348-1350. [4] Misawa, K. et al. (2005) GCA 69, 5847-5861.

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