

+

#0019

+

**Hf-W evidence for the age and origin of large igneous inclusions in chondrites**

Hellmann, J.L., Kruijer, T.S., Metzler, K., Kleine, T.

Institut für Planetologie, Westfälische Wilhelms-Universität Münster, Wilhelm-Klemm-Str. 10, 48149 Münster. [jan.hellmann@uni-muenster.de](mailto:jan.hellmann@uni-muenster.de).

Large igneous inclusions in chondrites can provide important insights into the accretion history of chondrites, but the age and origin of the inclusions remain enigmatic. To address this issue, we applied the short-lived Hf-W chronometer to a large Na rich, igneous-textured inclusion from the L 5/6 chondrite NWA 8192. This inclusion is essentially metal-free, making it suitable for dating using the Hf-W system. The inclusion is characterized by a large  $^{182}\text{W}$  excess and a strongly superchondritic  $^{180}\text{Hf}/^{184}\text{W}$ , corresponding to a Hf-W model age of metal loss of ~1 Ma after CAI formation. This age is significantly older than the Hf-W model age of ~10 Ma after CAI obtained for metal from the host chondrite. Thus, the inclusion remained chemically and isotopically isolated from the host meteorite during thermal metamorphism. Several observations indicate that the inclusion represents a partial melt from a differentiated body: (1) the Hf-W age of ~1 Ma after CAI is older than ages for most chondrules; (2) the Hf-W systematics of the inclusions resemble those of basaltic eucrites; and (3) the inclusions has an LREE-enriched composition, unlike those of chondrules.

+

+

Cite abstract as:

Hellmann, J.L., Kruijer, T.S., Metzler, K., Kleine, T. (2015) Hf-W evidence for the age and origin of large igneous inclusions in chondrites. Paneth Kolloquium, Nördlingen (Germany), abstract URL: <http://www.paneth.eu/PanethKolloquium/2015/0019.pdf> (abstract #0019).