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A xenolith in the Murchison CM chondrite formed by fluid-assisted percolation during metasomatism (CM6?)

Kerraouch* I., Bischoff A., Zolensky M. E., Ebert S., Patzek M., Pack A., Schmitt-Kopplin P. *Institut für Planetologie, Westfälische Wilhelms-Universität Münster, Wilhelm-Klemm Str. 10, D-48149 Münster, Germany (ikerraou@uni-muenster.de).

The CM chondrites are generally complex impact breccias, in which lithic clasts and mineral fragments showing various degrees of aqueous alteration and possibly originating from different parent bodies are mixed together (e.g., [1]). In this study, we reinvestigated a foreign white clast in the Murchison CM chondrite [2,3]. In addition to the classification we discuss the origin and the history of its formation by studying several aspects like mineralogy, bulk chemistry (e.g., REE), oxygen isotopes, and the soluble organic compounds. The O-isotope composition of the clast falls in the field of CM chondrites ($\Delta^{17}\text{O} = -3.16\text{‰}$). The white clast may have formed in the interior of the CM (or a CM-like) parent body by fluid-assisted percolation during metasomatism triggered by shock-induced annealing.

[1] Bischoff A. et al. (2018) *Meteoritics & Planet. Sci.* 53:6217. [2] Isa J. et al. (2014) *Geochim. Cosmochim. Acta* 124:131–151. [3] Kerraouch I. et al. (2019)

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