

Noble gases in CV chondrites – searching for effects of parent body processing.

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Carbonaceous chondrites (CC) of the Vigarano-type (CV) are particularly petrographically complex meteorites [1]. They are divided into three subgroups (CV_{Red}, CV_{OxA}, and CV_{OxB}) based on chemical and petrographic criteria [1,2]. The CVs experienced (comparably mild) parent body aqueous alteration and thermal metamorphism to variable degrees, spanning petrologic subtypes from 3.05–3.7 (e.g., [3,4]). Previous studies have shown that asteroidal secondary processes have correlated effects on the noble gas compositions of primitive CCs, such as CI, CY, CR, CM, and CO chondrites [5–8]. In this study, we look for (similar?) trends in the noble gas compositions of CVs allowing us to further constrain the complex (post-)accretion history of CVs and their initial noble gas inventory. To date, we analyzed the He–Xe in 22 CVs of variable subgroup and petrologic subtype. First results will be presented at the meeting.

[1] McSween (1977) GCA 41, 1777–1790. [2] Weisberg, M.K. et al. (1997) MAPS 32, 138. [3] Bonal, L. et al. (2006) GCA 70, 1849–1863. [4] Richter, K. et al. (2023) MAPS 58, 25–40. [5] King, A.J. et al. (2019) Geochemistry 79, 125531. [6] Busemann, H. et al. (2021) 52nd LPSC, #2718. [7] Krietsch, D. et al. (2021) GCA 310, 240–280. [8] Eckart, L.M. et al. (2025) GCA 402, 104–133.