# Nd nucleosynthetic anomalies in CV-CK chondrites

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Isotope distributions in chondrites are critical for understanding the processes that occurred during accretion of our solar system. Previous studies have proposed that observed Nd anomalies in some chondrites relative to Earth indicate heterogeneous distribution of pre-solar grains in the solar nebula [1,2,3]. Isotopic compositions of Mo, Cr, Ti, Sr, O, and other elements indicate that two isotopically distinct reservoirs, exhibited by carbonaceous chondrites (CC) and ordinary chondrites/enstatite chondrites/Earth (NC), respectively, were present in the early nebula [3,4]

The Nd nucleosynthetic compositions of carbonaceous chondritic parent bodies have been poorly understood due to limited CC high-precision Nd isotope measurements and none on equilibrated CC samples. Isotopic compositions of Mo, Cr, Ti, Ni, and Nd have shown variations within the different groups of CC chondrites, indicating parent bodies with different compositions, likely due to both the heterogeneous distribution of pre-solar grains within the larger CC reservoir, but also the incorporation of CAIs [1,2,3,4,5]. To better understand these compositional variations, the isotopic compositions of each group of CC chondrites need to be better be evaluated. The CK chondrites have not been previously analysed for Nd nucleosynthetic anomalies. The CK's are the only group of C chondrites with equilibrated representatives at metamorphic grades 5 and 6, thus provide the opportunity to obtain Nd isotope compositions with full access to nucleosynthetic components via traditional acid digestion techniques.

To address this, high-precision TIMS Nd isotope measurements will be performed using a multistatic 3-line routine on 12 bulk CV-CK chondrites. Five CV3 chondrites and seven CK chondrites including two CK4, three CK5, and two CK6 chondrites will be analyzed. The range of metamorphic grades allow for examination of the effect of unequilabrated pre-solar grains to leverage the Nd isotopic compositions over the range of CK chondrites with implications to the other CC groups. The results of this study will be available at the time of presentation.

[1] Burkhardt *et al.* (2011) *EPSL* **312**, p390. [2] Yokoyama *et al.* (2015) *EPSL* **416**, p46. [3] Fukai & Yokoyama (2017) *EPSL* **474**, p206. [4] Warren (2011) *EPSL* **311**, p93. [5] Trinquier *et al.* (2009) *Science* **324**, p374.