LAYERED MATRIX IN THE CV3 NWA 2364 CHONDRITE.

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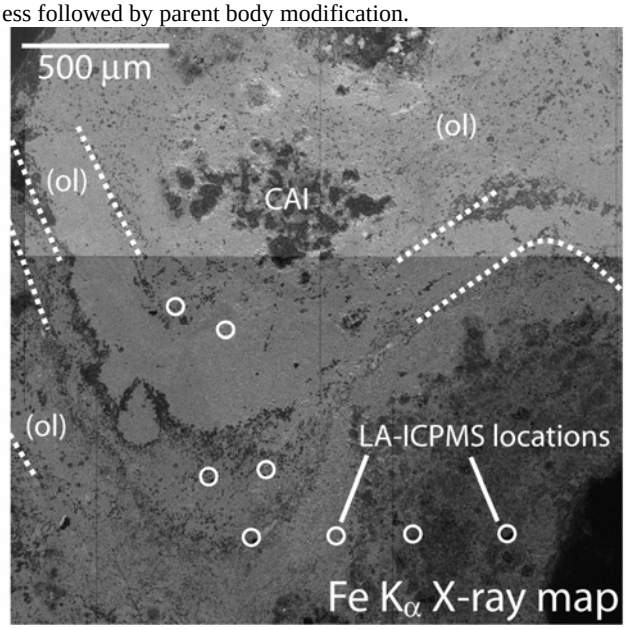
We report on the textural, mineralogical, and chemical characteristics of an unusual layered matrix phenomenon in the NWA 2364 CV3 chondrite. The layers are enclosed within a cup-shaped CAI [1] and suggest a temporally distinct collection process followed by parent body modification.



We used SEM, EMPA, and LA-ICPMS to characterize layered regions. The layers are porous aggregates of olivine (labeled ol above) with minor to trace awaruite and Ca-pyroxene. Each layer has a distinct porosity and texture and they vary from fine (<5µm) olivine grains to mixtures of fine olivine and coarser grains up to 20µm. Slight compositional differences between the olivine in the layers was noted, and additional EMPA work is in progress. A border material (dark boundaries and indicated by dashed lines) of hedenbergite composition separates the olivine layers. Trace elemental analyses using LA-ICPMS show varying enrichments of up to 5×CI in Cu, Co, As, Se, Mo, and Sn across all layers. Analyses of other matrix regions in NWA 2364 do not show these elemental signatures. Enrichments of these elements suggest unusual redox conditions within this region. The layered regions share textural and compositional features with dark inclusions (DI) in CV3s [2] and bear some similarity to crossbedded layers in Vigarano DIs, interpreted to have formed in asteroidal ponds by seismic shaking [3,4]. The layered matrix regions clearly provide clues to compaction, deformation and alteration in an asteroidal setting.

References: [1] Friedrich J. M. et al. 2005. Abstract #1756. 35th Lunar & Planetary Science Conference. [2] Johnson C. A. et al. 1990. *Geochimica et Cosmochimica Acta* 54:819-830. [3] Zolensky M. E. et al. 2002. Abstract #1593. 33rd Lunar & Planetary Science Conference [4] Zolensky M. E. et al. 2004. Abstract #1332. 35th Lunar & Planetary Science Conference.