

**<sup>21</sup>NE COSMIC-RAY EXPOSURE AGES OF UREILITES.**

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**Introduction:** Ureilites are ultramafic achondrites that might represent the mantle of a large single asteroid that was stratified in olivine composition; the ureilite parent body (UPB) [1,2]. However, this may not be the case; these achondrites also have primitive characteristics with regards to their oxygen isotopes [3], high trace siderophile element abundances, and trapped noble gases of chondritic abundance with a fractionated, planetary-like, pattern [4]. Therefore, it is hard to make a clear distinction as to whether ureilites represent primitive or differentiated materials. Cosmic-ray exposure (CRE) age distributions of a meteorite class sometimes cluster and are interpreted as the time of a major collision on a parent body [5]. CRE work by [6] suggests possible groupings around 1 and 10 Ma, but number statistics are still low.

The goal of this work is to further constrain the origin of ureilites, investigating possible relationships of CRE ages with other parameters. This will be done by comparing oxygen isotopic ratios and olivine composition (Fo #) to their corresponding CRE ages; calculated from a suite of ureilites using isotopic compositions measured or tabulated by [6] and [7] and using analysis similar to [6].

**Results:** Preliminary results show a wide spread in the 17 CRE ages, with signs of a couple possible groupings that would require more samples to be confirmed. Any correlation with Fo # is weak, suggesting that the ureilites that share common fundamental properties may not share recent parent bodies. The next step in analysis is to compare this data to oxygen isotopes.

**References:**

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