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**Isotopic complementarity of chondrules and matrix and the origin of chondrules**

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Understanding the genetic relationship of chondrules and matrix is critical for constraining the origin of chondrules. The chemical complementarity of chondrules and matrix suggests a genetic link [1], although this is debated. To address this issue, we obtained high-precision W and Mo isotope data on 3 matrix and 6 chondrule separates from Allende (CV3). The data reveal complementary nucleosynthetic isotope anomalies and show that the matrix is enriched in *s*-process nuclides over chondrules. This isotopic complementarity reflects preferential incorporation of an *s*-process carrier into the matrix—perhaps as a result of sorting of dust grains according to their size or type—and requires formation of chondrules and matrix from a single nebular reservoir. As such, the isotopic data rule out formation of chondrules and matrix by protoplanetary collisions or in separate nebular regions. Given that bulk Allende shows no significant nucleosynthetic W isotope anomaly, chondrules and matrix must have formed in a narrow time interval, followed by rapid accretion to their parent body.

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[1] Palme, H. et al. (2015) EPSL 411, 11–19.

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