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The r, s, and p-process record in presolar grains

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The isotopic compositions of Sr, Zr, Mo, Ru, and Ba in presolar SiC and graphite have much to tell us about nucleosynthesis in stars. We highlight here two examples from recent simultaneous measurements on multiple elements in single presolar grains. (1) From their Mo and Ru isotopic compositions, the mainstream, Y-, and Z-type SiC grains have remarkably constant and solar-like ratios of *r*- to *p*-process isotopes, implying that their parental AGB stars had near-solar initial isotopic compositions. (2) Graphite grains contain Mo and Ru, but suffer from some solar system Mo contamination. Ruthenium, on the other hand, seems pristine. One Ru-rich area within a graphite grain has a more pure s-process component than any AGB star model is capable of producing in well-mixed envelope. This implies that grain formation around AGB stars can occur before the envelope is thoroughly mixed after a third dredge-up event. We will summarize recent data on heavy elements and the constraints they place on nucleosynthesis mechanisms.

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