Topic: **Binary systems I. Novae and X-ray bursts**
NIC_XI_239

Oxygen Rich Stardust Grains from Novae

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Content
Stardust grains which have condensed from nova ejecta are exceedingly rare in meteorites. Principally through proton captures, novae are efficient producers of the stable isotopes 13C, 15N, and 17O, as well as radioactive isotopes such as 22Na and 26Al [1-3]. To date, primarily carbonaceous phases of stardust grains (e.g., SiC and graphite), with combinations of low 12C/13C and 14N/15N ratios, high 30Si/28Si, and high inferred 26Al/27Al and 22Ne/20Ne ratios (when measured), have been purported to have formed in novae [4-6]. A few purported nova grains may have actually condensed in supernova ejecta [7]; however, some are undoubtedly nova condensates [8, 9]. Conversely, as material ejected in nova explosions is O-rich, it remains a puzzle why to date mostly carbonaceous nova grain candidates, with only a few possible exceptions [10, 11], have been discovered. O-rich stardust grains with 17O/16O ratios significantly greater than 0.004, the predicted maximum value that can be reached in low- and intermediate-mass AGB and RGB stars [12], have been proposed to be of nova origin. In most cases, the O isotopic compositions of many of these grains can be fairly well matched by CO nova model predictions. However, for the two grains which have had their Mg-Al compositions determined, the models greatly overproduce the heavy Mg isotopes, missing the grain data by up to several orders of magnitude [11, 13]. Hopefully, new nova models computed with recently updated reaction rates and multi-element isotopic data for two new nova candidate grains can provide further insight into the composition of dust from these sources.

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