

APR21-2021-020151

Abstract for an Invited Paper
for the APR21 Meeting of
the American Physical Society

Condensation of SiC Stardust in CO Nova Outbursts

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This study on presolar grains compares high-precision isotopic compositions of individual SiC grains with low $^{12}\text{C}/^{13}\text{C}$ ratios, low $^{14}\text{N}/^{15}\text{N}$ ratios, large ^{30}Si excesses, and high $^{26}\text{Al}/^{27}\text{Al}$ ratios, all available in the presolar grain database, to new CO and ONe nova models with white dwarf (WD) masses from 0.6 to 1.35 Me. The models were designed to match the Large Binocular Telescope high-dispersion spectra acquired for nova V5668 Sgr. These CO nova models provide elemental abundances up to calcium and include mixing of WD material into the accreted material in a binary star system under several scenarios, including one where mixing occurs only after temperatures $\geq 7 \times 10^7$ K are achieved during a thermonuclear runaway (TNR). The 1.15-1.35 Me simulations where 25