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Effects of Initial Composition on A=28-48 Reaction Flows in Thermonuclear Supernovae[1] DAVID A. CHAMULAK, Argonne National Laboratory, EDWARD F. BROWN, Michigan State University, ALAN C. CALDER, SUNY Stony Brook, AARON P. JACKSON, United States Naval Research Laboratory, BRENDAN K. KRUEGER, SUNY Stony Brook, F.X. TIMMES, Arizona State University, DEAN M. TOWNSLEY, The University of Alabama — Type Ia supernovae (SNe Ia) are the main distance indicator for cosmological studies and a primary source of the iron peak elements in the solar system. However the progenitor systems for this type of supernovae remain loosely understood. Numerical modeling can now probe the connection between the properties of the progenitor and the outcome of the explosion. We have performed numerical calculations to examine the nucleosynthesis in SNe Ia. Detailed yields resulting from explosive burning of the carbon/oxygen plasma in our models are examined using post-processing through a 532-nuclide reaction network. We explore how the production of elements from silicon to titanium varies with the composition of the progenitor star. Our calculations identify the reactions that most effect the final yields. These yields may be observable, allowing nuclear physics to constrain the astrophysical scenario.

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