

# Elemental Synthesis in Classical Novae and Recurrent Novae

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- Nova explosions occur in semi-detached binary systems containing a late-type star (the secondary) and a white dwarf (WD). Material from the secondary spills onto the WD via an accretion disc. In time, conditions at the base of the layer accreted on the WD become degenerate, and hot enough to trigger a thermonuclear runaway (TNR).
- TNR explosion results in the ejection of  $\sim 10^{-5}$  to  $10^{-4} M_{\odot}$  material, enriched in C, N, O, Mg, Si, Al, Ne, and other metals, at several 100 to 1000  $km s^{-1}$
- Constraints on the theoretical models of nucleosynthesis in the outburst, chemical anomalies related to nucleosynthesis, and the evolution of the progenitor are provided by spectroscopic observations of the ejecta from which detailed elemental abundance patterns can be derived using **Cloudy**.

