Abstract Submitted
for the APR07 Meeting of
The American Physical Society

Studying the ^{30}P(p,γ)^{31}S reaction using the ^{31}P(^{3}He,t)^{31}S*(p)^{30}P reaction C. WREDE, Yale, J.A. CAGGIANO[1], TRIUMF, J.A. CLARK, C. DEIBEL, Yale, R. LEWIS, York, A. PARIKH[2], P.D. PARKER, Yale, C. WESTERFELDT, TUNL — Enriched isotopic abundance ratios of ^{30}Si/^{28}Si in several presolar SiC and graphite grains qualitatively indicate oxygen-neon (ONe) nova origins but fall short of ONe nova model predictions by factors of 20-90. The ^{30}P(p,γ)^{31}S reaction rate uncertainty in ONe novae spans four orders of magnitude through which the predicted amount of ejected ^{30}Si can vary by a factor of 100. By measuring the ^{31}P(^{3}He,t)^{31}S*(p)^{30}P reaction we have determined the energies of astrophysically relevant ^{31}S excited states to $\pm$ 3 keV, and have found one new resonance. Proton branching ratios have been constrained by detecting decay protons in coincidence with tritons. Implications for the ^{30}P(p,γ)^{31}S reaction rate, ^{30}Si production, and S-Ca production in ONe novae will be presented.

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Date submitted: 16 Jan 2007 Electronic form version 1.4