# THE SEARCH FOR SUPERNOVA SIGNATURES IN AN ICE CORE*

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It has been suggested that ice cores may preserve detectable enhancements of some terrestrially rare radioisotopes, $^{10}$Be, $^{26}$Al, $^{36}$Cl, resulting from a near-Earth type II supernova[1]. Both $^{10}$Be and $^{36}$Cl are also produced by atmospheric cosmic ray spallation and hence are also influenced by other processes that modulate the Earth's cosmic ray flux. Previous studies [2,3] have suggested that enhancements occurred in the $^{10}$Be and $^{36}$Cl fluxes at ∼35ky and at ∼60ky for $^{10}$Be. Thus we have searched for potential supernova condensates with $^{26}$Al amongst grains filtered from the Guliya ice core recovered from the Qinghai-Tibetan plateau in China [3]. A simple model is developed and calculations are presented to estimate the number of $Al_2O_3$ grains that could be deposited per cm$^2$ on the Earth by a type II supernova.

We have obtained six Guliya grain samples from the following time periods: ∼2-10ky, ∼25-27ky, ∼34-36ky, ∼53-57ky, ∼59-62ky and ∼68-72ky. Potential supernova condensate grains spinel ($MgAl_2O_4$) and corundum ($Al_2O_3$) were identified among their terrestrial diluents employing a procedure developed at the University of Chicago for detecting presolar grains in meteoritic samples [4]. A sampling of 37 grains from the 34-36ky, 53-57ky and 59-62ky samples were analyzed with the NanoSIMS at Washington University to measure their isotopic oxygen ratios. The prelimary results indicate that the analyzed grains, representing $< 15\%$ of those identified, do not possess the large oxygen isotopic anomalies expected to characterize a supernova source.

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