

## EXAMINING THE ABUNDANCES OF RARE ELEMENTS IN SOLAR ENERGETIC PARTICLE EVENTS

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While the event to event variability of heavy ion composition in solar energetic particle (SEP) events has been well studied, these results are typically limited to the more dominant elements (e.g., C, N, O, Ne, Mg, Si, S, Fe). The abundances of rare elements such as P, Cl, K, Ti, Cr, Mn, Co, Cu and Zn in SEP events have been obtained only by combining data from large numbers of events. With the large geometry factor of the Solar Isotope Spectrometer on ACE the variations of these rare species can be examined in the energy range of 20-100 MeV/nucleon. We will present these results and discuss their interpretation in terms of charge-to-mass and first-ionization-potential fractionation processes. This work was supported by NASA at Caltech (under grant NAG5-6912), JPL, and GSFC.