

## **SOLAR CORONAL ACCELERATION OF MINORITY IONS AND ITS ASTROPHYSICAL IMPLICATIONS**

**Ilan Roth**

Space Sciences Laboratory, University of California, Berkeley, CA 94720, USA.

Magnetic activity in the solar corona is often related to enrichment of minority elements in the heliosphere. One of the most significant coronal acceleration processes include impulsive flares which were shown to correlate with the spectacular increase in the isotopic abundance ratio of He-3/He-4 by a factor of  $\sim 1000$  and the ratio Fe/O by a factor of  $\sim 10$ . Recent measurements indicate a relative (to O) enhancement of flare accelerated Solar Energetic Particles in the high-Z regions ( $Z > 34$ ) of  $> 100$ . We critically assess the model of the coronal resonant interaction between electromagnetic ion-cyclotron waves and coronal ions to discern the conditions for a similarity of the He-3 and Fe acceleration mechanisms with a possible extension to the higher-Z region acceleration. Implementation of these acceleration processes to astrophysical application for the early solar system and for planetary nebulae will be indicated.