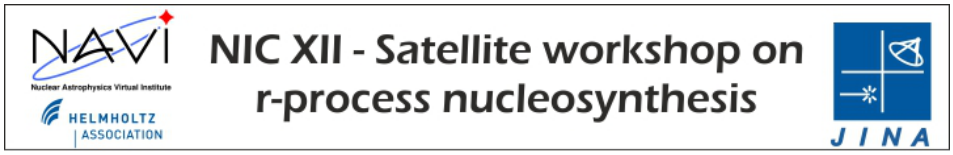

Contribution ID: **16** Type: **not specified**

Light Trans-Ironic Elements in Metal-Poor Stars with Low r-process Enhancement

Saturday, 4 August 2012 10:15 (30 minutes)

We extend our analysis of archival 2000A HST STIS E230H echelle spectra of five metal-poor stars with modest r-process enhancements to rare light trans-ironic elements represented by very few lines. We illustrate potential pitfalls affecting abundance determinations of isolated weak lines in the blended ultraviolet, which we minimize by analyzing all five stars simultaneously and consistently, calculating their entire visible and UV spectra from first principles.

Peterson (2011, ApJ, 742, 21) derived abundances of molybdenum and ruthenium (Mo, Ru; Z = 42, 44) in all five stars, finding extremely elevated [Mo/Fe] in two cases. Because [Ru/Fe] was also nearly as high, but not Zr (Z = 40) nor s- nor r-process elements with Z >= 56, a high-entropy wind is favored for their overproduction. Because only the low-entropy regime of the high-entropy wind yields a sharply-peaked overproduction at Z = 40 and 42, only one or a few such HEW events are implicated in the two extreme cases.

To check the range in Z over which such a low-entropy HEW wind may be effective, we present here new abundance determinations of light trans-ironic elements of both lower and higher Z, including Ge, As, Se, Cd, Sn, and Te (Z = 32, 33, 34, 48, 50, 52). We discuss the constraints this places on the yields of the low-entropy regime of a high-entropy wind, and on the subsequent incorporation of the products into subsequent stellar generations.

Primary author: Ms PETERSON, Ruth (AAdv)

Presenter: Ms PETERSON, Ruth (AAdv)

Session Classification: Observations & Data