

N. J. Chanover, R. Tawalbeh, D. A. Glenar, D. G. Voelz, X. Xiao, K. Uckert, P. J. Boston, S. Getty, W. B. Brinckerhoff, P. R. Mahaffy, T. Cornish, S. Ecelberger, "Rapid assessment of high value samples: an AOTF-LDTOF spectrometer suite for planetary surfaces," *IEEE Aerospace Conference*, 1-10, IEEE, Piscataway, NJ (2012).

We discuss the development of a miniature near-infrared point spectrometer, operating between 1.7-3.45 μm , based on acousto-optic tunable filter (AOTF) technology. This instrument may be used to screen and corroborate analyses of samples containing organic biomarkers or mineralogical signatures suggestive of extant or extinct organic material collected in situ from planetary surfaces. The AOTF point spectrometer will be paired with a laser desorption time-of-flight (LDTOF) mass spectrometer and will prescreen samples for evidence of volatile or refractory organics before the laser desorption step and subsequent mass spectrometer measurement. We describe the AOTF point spectrometer instrument and present laboratory analysis of geological samples of known astrobiological importance. We also present LDTOF spectra of the same samples analyzed with the AOTF, which highlights the value of a comparative data set with the two instruments. We discuss plans for the integration of the two instruments, which is scheduled to take place in the first half of 2012. The AOTF-LDTOF instrument pairing offers the powerful advantage of cross-checked chemical analyses of individual samples, which can reduce chemical and biological interpretation ambiguities.