N. J. Chanover, D. A. Glenar, D. G. Voelz, X. Xiao, R. Tawalbeh, P. J. Boston, W. B. Brinckerhoff, P. R. Mahaffy, S. Getty, I. ten Kate and A. McAdam, "An AOTF-LDTOF spectrometer suite for in situ organic detection and characterization," *IEEE Aerospace Conference*, 1-13, IEEE, Piscataway, NJ (2011).

We discuss the development of a miniature near-infrared point spectrometer, operating in the 1.7-4 mm region, 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. 1 2 We describe the prototype AOTF point spectrometer instrument and present laboratory analysis of geological samples of known astrobiological importance. An initial mineral and rock sample suite of planetary relevance was used in the laboratory for baseline testing. To this, we will add a complement of astrobiologically relevant biosignatures from a variety of well-characterized geomicrobial study sites. We also describe LDTOF analysis of kaolinite and serpentine specimens, which are both highly relevant to the Martian surface mineralogy and the aqueous history of the planet. 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.