THERMAL EMISSION SPECTROSCOPY OF SYNTHETIC IGNEOUS GLASSES. V. E. Hamilton[1] and M. B. Wyatt[2], [1]Department of Geology, Arizona State University, Tempe, AZ; hamilton@tes.la.asu.edu; [2]Planetary Geosciences Institute, The Univerisity of Tennessee, Knoxville, Tennessee; mwyatt@utkux.utcc.utk.edu.

Introduction: Initial results from the Thermal Emission Spectrometer (TES) experiment indicate that a significant portion of the Martian surface is covered by basaltic material [1]. Recent results suggest that at least two compositions are present, one of which may contain a significant glassy component [2]. Glassy components may present problems for the deconvolution of surface spectra if there are no glass endmember spectra available. Because the Arizona State University (ASU) spectral library [3] currently does not contain any glass samples, it is important to obtain and analyze several for use in analyzing TES data.

Background: Glassy samples are known to have thermal infrared spectral signatures that have broad spectral features with few superposed high-frequency bands [4] (Figure 1). This is due to the amorphous nature of the glass, which does not contain long range crystalline structure. Glassy components in terrestrial basaltic and andesitic rocks vary in composition [5] and therefore may exhibit differences in their spectral character.

Samples and data acquisition: A series of glass samples will be synthesized that represent a range of silica saturated and silica undersaturated compositions. The samples will then be analyzed at ASU using the Mattson Cygnus 100 thermal emission spectrometer [6]. Sample compositions will be obtained by electron microprobe analysis at the University of Tennessee.

Results: This study is in its initial stages. We expect to present initial spectral analyses of synthetic glass samples, examine spectral characteristics as a function of compositional variability, and compare the results of deconvolution models of igneous rocks that include and exclude the glass spectra as endmembers. By determining the degree of spectral variation as a function of composition, these results will help us determine how many glass endmembers are required for accurate deconvolution of igneous samples.

References: [1] Bandfield, J. L. Christensen, P. R., and Hamilton, V. E., (1999) *LPSC XXX,* Abstract #1725. [2] Bandfield, J. L., Christensen, P. R., and Hamilton, V. E. (1999) this volume. [3] Christensen, P. R., et al., (1999) *JGR*, in press. [4] Ramsey, M. S. and Fink, J. H. (1999) *Bull. Volc.*, in press. [5] Wyatt, M. B., et al., (1999) *LPSC XXX*, Abstract #1754. [6] Ruff, S. W. et al., (1997) JGR, *102*, 14,899-14,913.

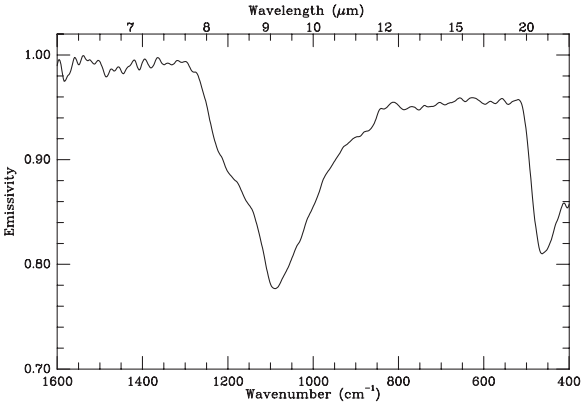

Figure 1. Emissivity spectrum of obsidian glass.