We are in the process of establishing a Surface Physics Laboratory at Western Kentucky University. The initial experiments will focus on measuring the yield of excited atoms which have been desorbed or ejected from a surface following bombardment by an electron beam. These excited-state, electron-stimulated desorption (ESD) yields will be determined by measuring the optical radiation emitted by the excited atoms as they recede from the surface. Subsequent experiments will be aimed at measuring the yield of ground-state desorbates using a mass spectrometer. In each case we will make these measurements as a function of electron beam energy, beam current density and sample temperature.

In order to more easily perform these complex experiments we have implemented a computer-based data acquisition and experiment control system, which consists of a Macintosh IIvx computer, a multi-function I/O board (with timers, counters, ADCs and DACs), a GPIB interface board and LabVIEW II software. This system will allow the researcher to (1) easily control various experimental parameters, (2) acquire, display and store data, and (3) analyze data. The software package LabVIEW (from National Instruments) was chosen because it is an extremely powerful yet easy to use data acquisition programming environment which accomplishes all three of the above tasks. This paper will describe how we have implemented LabVIEW in the Surface Physics Laboratory at Western Kentucky University to perform the experiments described above.