Investigating chemicurrent production from hyperthermal-energy ion impacts

S.A. MOODY, M.P. RAY, C.E. SOSOLIK, Department of Physics and Astronomy, Clemson University — The production of chemicurrents by thermal-energy molecular beam scattering from thin-film Schottky diode surfaces has generated considerable interest in the field of gas-surface physics. These experiments promise to give insight into energy transfer processes at surfaces. However, few experiments have investigated chemicurrent production at higher impact energies. We propose experiments to study beam impact events on Schottky diode/thin film surfaces using hyperthermal ion beams, with the added capability of studying the mechanism of charge transfer. These experiments will utilize our lab’s highly versatile beamline. The beamline is ideal for exploring chemicurrent phenomena at higher energies because of the capability it gives us to produce well-characterized ion beams at hyperthermal- and low-energies with a wide variety of gas and solid-state sources. This talk will focus on optimization of our beamline for this experiment. Specific attention will be given to the addition of a new load lock/sample transfer system and the electronic interfacing required for simultaneous scattering/chemicurrent data acquisition. Preliminary results from hyperthermal impact events on thin film Schottky diodes are also presented.

S.A. Moody

Date submitted: 30 Nov 2005

Electronic form version 1.4