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Probing Electron-Hole Pair Production in Ultrathin Film Schottky Diode Devices using Hyperthermal Energy Ion Beams.[1] MATTHEW RAY, RUSSELL LAKE, CHAD SOSOLIK, Clemson University, CLEMSON UNIVERSITY DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING COLLABORATION — We are investigating the interactions of hyperthermal energy ions with ultrathin film Schottky diode devices, probing the role of ion-surface impact events and charge transfer on electron-hole pair production. Specifically, we measure currents that arise from electron-hole pair production at a diode surface. To date, these currents have been explored only for thermal energy gas-surface impacts, where they are called "chemicurrents". Using a UHV beamline to produce well-collimated monoenergetic noble gas and alkali-metal beams from 10 eV to 10 keV, we have the unique flexibility to probe our in-house designed diode devices with a wide range of incident species, energies, and charge states. Preliminary results are presented and discussed in the context of basic gas-surface energy transfer processes.

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