

**Calibration of the response of radiochromic film to monoenergetic ion beams from a 1.7 MV Pelletron accelerator<sup>1</sup>**

C.R. STILMAN, K.R. CROMPTON, M.J. SCHEPIS, C.G. FREEMAN, S.J. PADALINO, SUNY Geneseo, T.C. SANGSTER, Laboratory for Laser Energetics, University of Rochester — Radiochromic film (RCF) is used to study protons and other ions that are accelerated from the rear side of targets illuminated with ultra-intense laser light. An experiment is underway to characterize the response of RCF to protons, deuterons, and alpha particles of various energies using the 1.7 MV tandem Pelletron accelerator at SUNY Geneseo. A monoenergetic ion beam from the accelerator is incident on a thin ( $\sim 0.1 \mu\text{m}$ ) gold foil placed in the center of a 28-inch diameter scattering chamber. A strip of RCF is positioned in a circular arc that is centered on the gold foil. The ion beam strikes the gold foil, causing the RCF to be exposed to elastically backscattered ions. The scattered ion fluence on the RCF strip varies as a function of the scattering angle. After removal from the chamber, the RCF is scanned in transmission mode using an Epson 10000 XL flatbed scanner. The red channel of the resulting scan is used to determine the optical density of the film. The output from the flatbed scanner is cross calibrated with a precision microdensitometer (PDS).

<sup>1</sup>This work was supported in part by the U.S. Department of Energy through the Laboratory for Laser Energetics.

- Prefer Oral Session  
 Prefer Poster Session

Collin Stilman  
crs18@geneseo.edu  
SUNY Geneseo