

# CHARGE-STATE DEPENDENCE OF ENERGY LOSS IN RANDOM SOLIDS<sup>1</sup>

*B. Rosner,<sup>2</sup> S. Datz, W. Wu,<sup>3</sup> N. L. Jones, D. R. Schultz, and C. O. Reinhold*

We measured the energy loss of 10-, 16-, and 25-MeV oxygen ions in a thin (7.5 mg/cm<sup>2</sup>) carbon foil as a function of input charge state ( $q = 4-8$ ). At this thickness, charge-state equilibrium is nearly attained, but the energy losses accumulated over the ion's trajectory are a function of its initial charge state. Using a set of pertinent microscopic atomic collision cross sections computed using the classical trajectory Monte Carlo method, we link these parameters to the observed charge-state dependence on energy loss through a classical transport simulation. This simulation also leads to a prediction of charge-state equilibrium fractions.

- 
1. Abstract of published paper: *Phys. Rev. A* **57**, 2737 (1998).
  2. Technion – Israel Institute of Technology, Israel.
  3. Oak Ridge National Laboratory Postdoctoral Research Participant.