

## Spectral Analysis of Al/MgF<sub>2</sub> Foils Heated by Z-pinch Radiation\*

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Sandia National Laboratories' Z machine provides a good test bed for conducting basic plasma research on the interaction of x-rays with matter. In particular, recent experiments have been conducted that irradiate thin Al/MgF<sub>2</sub> metal foils by the radiation pulse from the side-on emission of a fast z-pinch. In these experiments, spatially and temporally resolved spectra of K-shell absorption lines, backlit by the high-energy tail of the z-pinch radiation, are the primary diagnostic of the foil plasma conditions. The experiments are simulated by 1-D radiation-hydrodynamics calculations using a time- and frequency-dependent radiation boundary condition determined by 3-D view factor simulations of the z-pinch diode region. The calculated plasma conditions are then utilized in a collisional radiative equilibrium (CRE) model to determine the relative amplitude of absorption features over the spectral range of interest. These calculations, and their comparison to the experimental data, will be presented and discussed.

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