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Energy Loss and Stopping Cross Section Factors for Alphas in Lead Iodide[1] B. MAGNESS, J. KIM, C. C. COLEMAN, CSULA — Lead Iodide is a candidate for use as a room temperature gamma ray sensitive semiconductor similar to mercuric iodide. We report here on values for the energy loss factor and the stopping cross section factor in lead iodide thin films. Vapor diffused purified lead iodide was used to make thick film and thin film samples evaporated on amorphic glass substrates. Thin films were used to take advantage of the surface energy approximation. In addition, separate lead and iodide backscattering peaks from the films are well resolved. Film thickness ranged from 50nm to 1000nm as determined by optical interference methods. The high energy singly ionized helium beam was provided by the CSULA 4 MeV Van de Graff accelerator. Rutherford backscattering was detected at 170°. Both the input and output energy losses were calculated from the FWHM of the corresponding peaks. The typical energy loss factor was found to be 20.2 eV/angstrom with a 3% uncertainty for a 2.4 MeV input beam. As expected, this value is about one third that of the pure elements.

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Charles Coleman
CSULA

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