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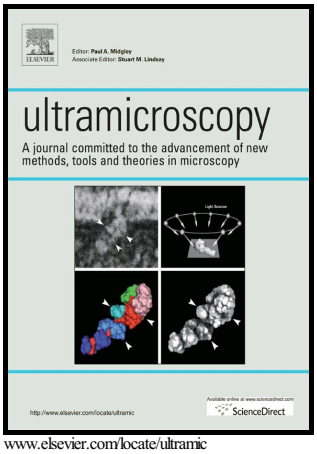

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Monte Carlo Modeling of Ion Beam Induced Secondary Electrons

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Abstract

Ion induced secondary electrons (iSE) can produce high-resolution images ranging from a few eV to 100 keV over a wide range of materials. The interpretation of such images requires knowledge of the secondary electron yields (iSE δ) for each of the elements and materials present and as a function of the incident beam energy. Experimental data for helium ions are currently limited to 40 elements and six compounds while other ions are not well represented. To overcome this limitation, we propose a simple procedure based on the comprehensive work of Berger et al. Here we show that between the energy range of 10 keV to 100 keV the Berger et al data for elements and compounds can be accurately represented by a single universal curve. The agreement between the limited experimental data that is available and the predictive model is good, and has been found to provide reliable yield data for a wide range of elements and compounds.

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