

Abstract Submitted
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Modeling Growth, Morphology and Optical Response of Chemically Deposited Silver Films LAWRENCE DAVIS, Department of Physics, University of Oregon, Eugene, OR, ELIZABETH KODPUAK, PCC Sylvania, Portland, Oregon, MATTHEW BOGGESS, MIRIAM DEUTSCH, Department of Physics, University of Oregon, Eugene, OR — A method for estimating the three dimensional (3D) morphology of metal films is presented. Rough silver films chemically grown on silica substrates are characterized via image analysis of scanning electron micrographs. While the latter technique provides only two dimensional structural projections, particle size distributions and time dependence of the surface coverage may be reliably determined. Three parameters governing film growth are extracted from the data and used as inputs for simulations. This allows for a simplified 3D film growth model, greatly reducing computing requirements while still providing direct access to the complete 3D structure of the films throughout the growth process. Two dimensional projections of the simulated films are compared to experimental data to determine the accuracy of the model. Information about the 3D structure of the films provided by this method is useful in predicting the optical response of the metal films.

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