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Three dimensional profile simulation for positive photoresists

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ABSTRACT

The least action principle algorithm is extended to model the development of a three dimensional latent image in an exposed resist. The photoactive compound (PAC) concentration is determined in a model resist film from the exact solution of Dill's equations for the exposure bleaching process for the case of a matched substrate. The procedure is valid for all mask shapes and is illustrated with an elliptical symmetry imposed upon the incident light intensity. Utilizing these PAC gradients, the three dimensional least action principle algorithm is employed to compute developed resist profiles.