

Ion beam etching process simulation for the pattern transfer of photoresist diffraction gratings generated by holography



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The manufacturing process for diffraction gratings based on interference lithography results at first in a resist surface relief pattern. However, the majority of applications demand grating structures in the inorganic substrate material itself. Commonly, a modification of the grating profile with regard to an optimized diffraction efficiency is necessary. Therefore a number of different etching methods may be employed. For the very often applied dry etching processes an intuitively accessible forecast of the resulting etched profile is virtually impossible. This is caused by the distinct angular dependence of the etching rate. Beside the option to predict etching results the adapted simulation tool based on MATLAB offers a deeper insight into the mechanics of the pattern transfer via ion etching.

