*Sensors and Materials*, Vol. 17, No. 4 (2005) 167–177
MYU Tokyo

S & M 0595

# Simulation of Anisotropic Etching of Alpha-Quartz for 3D Computer-Aided-Design System

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(Received October 1, 2004; accepted March 29, 2005)

***Key words:*** quartz, anisotropic etching, 3D CAD

Alpha-quartz anisotropic etching is a powerful tool for micromachining for the fabrication of various devices by photolithography. Therefore, this technique can help sensor engineers to develop computer-aided-design (CAD) systems. In this study, we estimated the etching rates of alpha-quartz wafers for all cut angles on the basis of our experimental data. Then, the configuration of the alpha-quartz wafer faces was predicted with the etching rate profile calculated from the experimental data. These results confirmed that our proposed theory corresponds to the experimental results for etching rates in all directions of alpha-quartz. We believe that the results of these simulations lead to the development of a three-dimensional CAD system for the precision design of complex-shaped objects to be fabricated by anisotropic etching of alpha-quartz.

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