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Photolithography on Microstructured Surfaces Using Photosensitive Polyimide

J. Muñoz,* R. E. G. van Hal and P. Bergveld

MESA Research Institute, University of Twente,
P.O. Box 217, 7500 AE Enschede, The Netherlands

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Improvements in patterning microstructured surfaces by means of photosensitive polyimides as an alternative to standard positive and negative photoresists are presented. Two different types of polyimide photoresists are used to check step coverage and image transfer to specific test substrates. These test substrates contain mesalike steps, which can be seen as a general configuration of 3-dimensional silicon sensors. Step coverage is characterized by leakage-current measurements and scanning electron microscope (SEM) spectroscopy. Thin photosensitive polyimide layers showed better step coverage and resolution than standard photoresist. Thick photosensitive polyimide showed good planarization properties when two layers were used. However, it is necessary to use a combination of wet and dry etching to obtain good resolution.

1. Introduction

At the start of the development of silicon sensors, planar IC technology was used for the fabrication of sensing semiconductor devices. A significant change in sensor design has occurred with the development of micromachining techniques, which are at present playing an ever-increasing role in the fabrication of silicon sensors. Advantages are obtained by defining sensing parts of the device at different

*present address: Centre nacional de microelectronica, Dept. de Silicio, Campus U.A.B., 08193 Bellaterra, Barcelona, Spain