Solid State Science and Technology, Vol. 19, No 1 (2011) 114-126
ISSN 0128-7389
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O2 PLASMA BASED SIZE REDUCTION FOR NANO ELECTRONICS DEVICE FABRICATION

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ABSTRACT

The field of plasma chemistry has provided some understanding of plasma processes. By controlling plasma conditions and gas mixtures, ultra-fast plasma cleaning and etching is possible. Plasma has frequently been used by the industry as a last step surface preparation technique in an otherwise predominant wet-etched process. With enhanced organic removal rate, plasma processes become more desirable as an environmentally sound alternative to traditional solvent or acid dominated process, not only as a cleaning tool, but also as a patterning and machining tool. In this paper, photoresist (PR) stripping using O_2 plasma process in nanogap fabrication is explained including many parameters for PR patterning with limited time in O_2 plasma process. And the applications that have not been possible with limited usefulness, plasma processes are now approaching the realm of possibility. We introduce this proposal to fabricate the nanogap device using O_2 plasma technique as a size reduction for biosensor fabrication. In this review, the 2 masks designs are proposed. The first mask is for the lateral nanogap and the second mask is for a gold pad electrode pattern, and lateral nanogap is introduced in the fabrication process using polysilicon, and gold as an electrode. Conventional photolithography technique is used to fabricate this nanogap (NG) based on the plasma etching technique.

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