World Academy of Science, Engineering and Technology
International Journal of Electrical and Computer Engineering
Vol:11, No:12, 2017

Study of Fast Etching of Silicon for the Fabrication of Bulk Micromachined MEMS Structures

Authors : V. Swarnalatha, A. V. Narasimha Rao, P. Pal

Abstract : The present research reports the investigation of fast etching of silicon for the fabrication of microelectromechanical systems (MEMS) structures using silicon wet bulk micromachining. Low concentration tetramethyl-ammonium hydroxide (TMAH) and hydroxylamine (NH₂OH) are used as main etchant and additive, respectively. The concentration of NH₂OH is varied to optimize the composition to achieve best etching characteristics such as high etch rate, significantly high undercutting at convex corner for the fast release of the microstructures from the substrate, and improved etched surface morphology. These etching characteristics are studied on Si{100} and Si{110} wafers as they are most widely used in the fabrication of MEMS structures as wells diode, transistors and integrated circuits.

Keywords : KOH, MEMS, micromachining, silicon, TMAH, wet anisotropic etching
Conference Title : ICMNSS 2017 : International Conference on MEMS, Nano and Smart Systems
Conference Location : Amsterdam, Netherlands
Conference Dates : December 04-05, 2017

Open Science Index, Electrical and Computer Engineering Vol:11, No:12, 2017 publications.waset.org/abstracts/65235.pdf