

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

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**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 tetramethylammonium hydroxide (TMAH) and hydroxylamine ( $\text{NH}_2\text{OH}$ ) are used as main etchant and additive, respectively. The concentration of  $\text{NH}_2\text{OH}$  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

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