ANALYSIS ON GEOMETRY AND SURFACE OF 150 μm SILICON WAFER AFTER BACKGRINDING AND WET ETCHING PROCESS

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ABSTRACT
This paper examines the warpage on the backside of silicon wafer after thinning process. The thinning process includes after backgrinding (BG) and after wet etching (WE). The results on wafer warpage were linked to transmission electron microscopy analysis. This is purposely to explain the correlation between warpage and depth of damage. Results showed that deep backside damage would induce high wafer warpage, hence reduced wafer strength and create difficulty during handling. Further study on surface roughness and topography of each surface finish is obtained by atomic force microscopy and scanning electron microscopy techniques. They indicated that low surface roughness is determined by the smooth surface condition, which goes to after wet etching process.

REFERENCES
[2]. Young JJ, Malshe AP, Brown WD, Lenihan T, Albert D, Ozguz V, (April 2001); Thermal modeling and mechanical analysis of very thin silicon chips for conformal electronic system. HD international conference and exposition on high density interconnects and system packaging, Santa Clara CA.
[3]. Chen J, De Wolf I, (February 2003); Study of damage and stress induced by backgrind in Si wafers. Semicond Science and Technology, Vol. 18, pp.267-268
[7]. Chen J, De Wolf I, (2003); Study of damage and stress induced by backgrind in Si wafers, Semiconductor Science and Technology, 18: 261-8.