Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Wafer Bow Effect on Copper Wafer Bonding KUAN-NENG CHEN, Microsystems Technology Laboratories, Massachusetts Institute of Technology, Cambridge, MA 02139, RAFAEL REIF — A good bonding quality of bonded interconnects is the key factor to achieve successful three-dimensional (3D) integration applications. Prior to copper interconnect bonding in real 3D devices, fundamental researches about copper blanket film bonding should be studied. Since two wafers with large wafer bows may be difficult to contact during bonding, the bonding quality may be affected. In this study, wafer bows of different silicon wafers coated with copper and tantalum films were measured at different temperatures to simulate the wafer bow evaluation during bonding. We further investigated the bonding qualities of bonded wafers with different wafer bows after bonded at different temperatures. Dicing tests were performed to analyze the qualities of copper bonded wafers. Based on the results, a criterion of wafer bows for good copper bonding quality is suggested.

Kuan-Neng Chen
Microsystems Technology Laboratories, Massachusetts Institute of Technology, Cambridge, MA 02139

Date submitted: 04 Jan 2006 Electronic form version 1.4