

# “Chemical Mechanical Planarization (CMP) Process Development for Through Glass Vias”

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## Abstract

The study I will discuss in this seminar focuses on a chemical mechanical polishing (CMP) process specifically designed for glass wafers used in packaging advanced semiconductor chips. Glass interposers with through glass via (TGV) technology are promising for system in package (SiP) integration because of the desirable thermal and electrical properties of glass. Producing TGVs requires removing and planarizing a metal overburden (copper and tantalum in our study) without damaging the thin (~100  $\mu\text{m}$ ) glass substrate or the metal interconnect within the vias. In this talk, I will present an overview of our research on silica-based slurries capable of uniformly removing copper and the intervening tantalum adhesion layer on 8-inch diameter substrates at a sufficiently high rate while stopping on glass. I will also discuss the properties of the polished surfaces characterized by electrochemical measurements and scanning probe microscopy.

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## Short bio:

Charmy Jani is a Materials Science & Engineering graduate student in Prof. Sitaraman Krishnan's research group at Clarkson University. Her research interests are in colloidal and surface engineering aspects of materials science. Her present research, in collaboration with Prof. Jihoon Seo (Clarkson University) and Dr. Shelby Nelson (Mosaic Microsystems), focuses on developing a CMP process for glass-based packaging solutions compatible with current integration levels and establishing new glass interposers at the forefront of semiconductor packaging technology. Before joining Clarkson University, Jani earned M.S. and B.S. degrees in Physics from the Saurashtra University, India.