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## **Using Tribology to Optimize a Commercial Polishing Process**

### **Abstract**

Picking up from the completion of an undergraduate senior design project, a tribometer research apparatus was developed throughout the summer of 2016 to where it could reliably gather friction data. The purpose of the apparatus is to study the contributions of factors such as polishing pad and substrate material, slurry composition, and polishing speed to the overall rate of material removal in a chemical mechanical polishing system. The goal of the summer research project was to complete the mechanical and electrical assembly of the tribometer and to minimize the effect of error sources. To validate the instrument, data was gathered regarding the coefficient of kinetic friction between a sample polishing pad, substrate and slurry and compared to that of an apparatus at another institution. In comparing past data with the data from this tribometer, taken under similar conditions, it was shown that the apparatus captures the true coefficient of friction with at least 90% certainty.