



partnering for process control

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The scope of this presentation is to review the Copper CMP process challenges and various approaches of using Integrated Metrology to control the Copper CMP.

Copper CMP involves bulk copper removal followed by fine planarization and barrier/dielectric removal. The main challenge of the Copper CMP is a fine balance between avoiding copper / barrier residues and minimizing the dishing / erosion effects. This process is pattern density related and its effect makes this balance even more challenging. Therefore, today it is highly desirable to measure the full profile of the metal line (ideally inside the die) and / or getting good correlation between the metrology and the electric test.

One approach reviewed in this presentation is dielectric measurements made on solid pads and their correlation to the E-test and the use of this data for APC. This approach assumes, that such correlation to the E-Test exists. Another approach where integrated metrology using full profiling is used for full Copper Line profiling, allowing much better correlation to the electrical tests.

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