



Cu Electroplating Process Chemicals

Suppression-based Copper Electroplating

Suppression-based Cu electroplating for super-fill of vias & trenches and high speed deposition of bumps & RDL's.

Key Benefits:

- **Lower Cost of Ownership vs Competing Chemistries**

- Over 2x higher through resist plating rate for bumps and redistribution layers (RDL's)
- Lower overburden and planarization after super-filling trenches and vias to decrease CMP slurry consumption with less dishing & erosion

- **Low Impurity Level in Cu film**

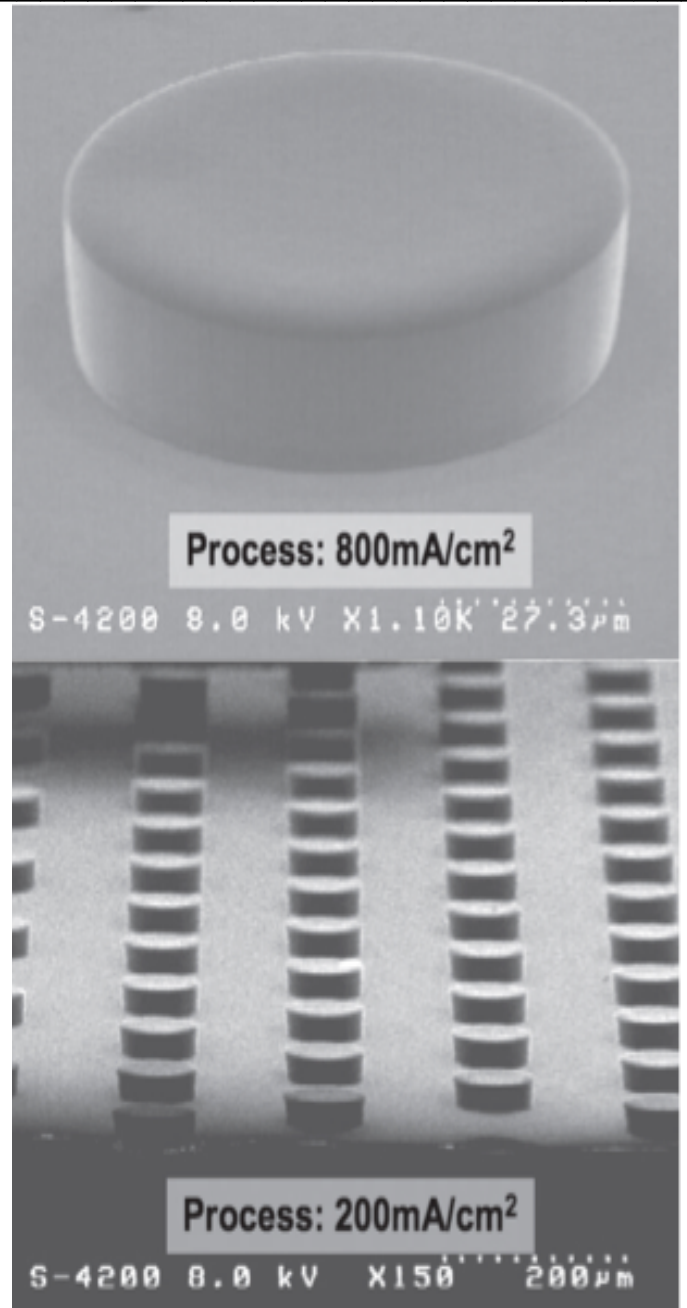
- Organic impurity level within Cu film is below 10 ppm
- Low stress induced voiding and resistivity due to tighter purity control

- **Optimal Surface Roughness and Texture**

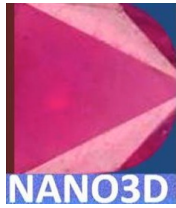
- Smooth surface morphology
- Strong (111) texture

- **Wide Plating Process Window**

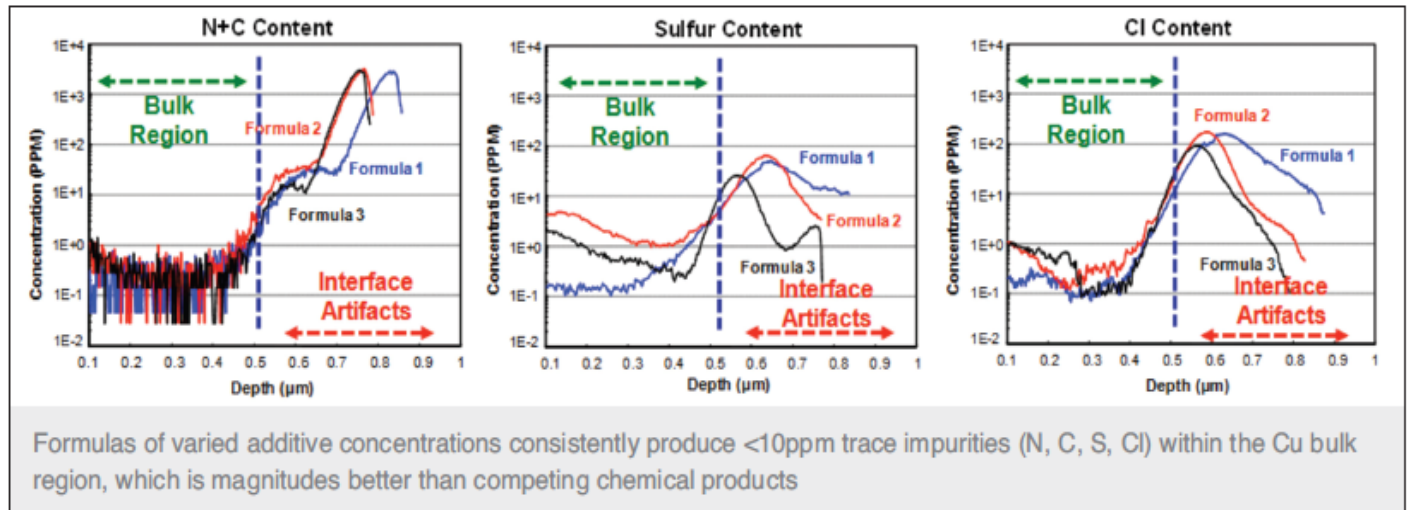
- Stable performance with varying concentrations of plating additives



Suppression-based Cu Electroplating produces Cu bumps that are uniform in height and smoothness for processes ranging from 200 to 800 mA/cm² and plating rate of up to 10 µm/min

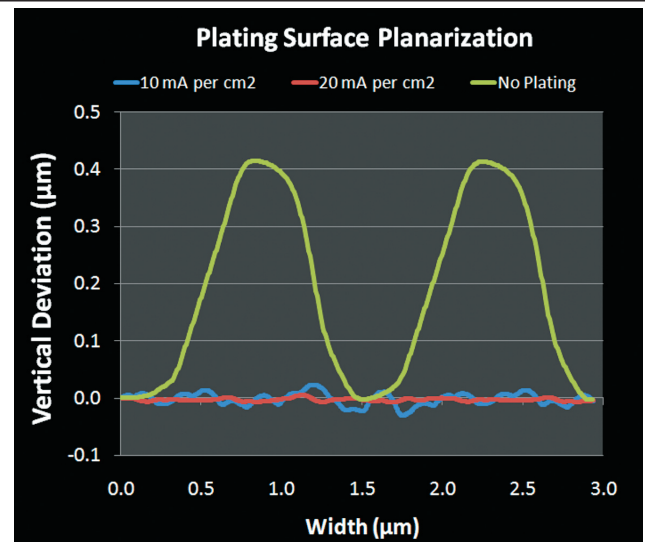


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Suppression-based Cu Electroplating Products

- **Cu electrolytes**
 - Copper High Acid
 - Copper Low Acid
- **Plating Additives**
 - Anti-Suppressor
 - Strong Suppressor A
 - Strong Suppressor B
- **Metrology Standards**
 - LSL Electrolyte Calibration Standards
 - USL Electrolyte Calibration Standards
 - Target Electrolyte Calibration Standards
 - LSL Additive Calibration Standards
 - USL Additive Calibration Standards
 - Target Additive Calibration Standards
 - Reagents for Plating Bath Metrology



Suppression-based Cu electroplating provides near 100% planarization of wide features after super-filling of trenches & vias with low WIDNU and low WIWNU (<1.5% @ 1 Sigma)

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