

Plating/Lithography

Manufacturing Technologies

The Plating capabilities in the Thin Film, Vacuum and Packaging department include both electroless and electro plating. These processes support Multi-Chip Module, microelectromechanical systems (MEMS), Weapons Systems (Neutron Tubes) and other miscellaneous projects.

Photo-processing facilities provide patterning and circuitry on a variety of substrate materials. The department's capabilities include dry film, liquid, and electrophoretically deposited resist application, exposure, development and patterning.

Capabilities

- Electroplate large areas using cyanide and non-cyanide based chemistries
- Routinely plate copper, nickel and gold
- Expertise in developing plating processes for unusual applications and metals
- Electroless nickel and copper plating
- Electrophoretic deposition of photoresist
- Low volume electro or electroless plating production capabilities (12-tank plating line)
- Immersion gold

- Develop, fabricate, and test coatings and patterns
 - Photoresist and organic film coating
 - Fine line high aspect ratio photo-patterning



Polymer Extrusion Coater

Resources

- Controlled lighting and cleanroom environment for photosensitive coatings
- Three screen printing systems located in cleanroom environments
- Plating laboratory of approximately 450 sq. ft.



450 sq. ft. Plating Laboratory

- VoltaLab 40 for performing real time electrochemical experiments and investigations
 - Can perform any type of potentiostatic or galvanostatic electrochemical impedance spectroscopy experiment
 - Real time measurement gathering capabilities
- 12-tank plating bath set up with 3 heated plating tank and 1 nonheated plating tank with intermittent double rinses
- Fume hood space for performing bench-top plating development.
- Thin Film Patterning – High resolution patterning for thin film networks
- Thin Film Deposition - Electron beam evaporation and sputtering of metals, dielectrics and compounds

- High Energy Ion Beam Source - High energy surface treatment.
- Laser Processing - Drilling (12 in. diameter, 6 mil via holes), sealing, ablation (4 in. x 4 in.), and patterning
- Pattern Electro Plating of Gold

Accomplishments

- Support of weapons related manufacturing activities
- Developed process to pattern interconnects for stacked components used in advanced sensor technology

Contact:

*Robert Stokes (Plating), (505) 844-2596
rnstoke@sandia.gov*

*Kenneth A. Peterson (Lithography), (505)
845-8549
peterska@sandia.gov*

SAND2003-3268P