



## Nano Electric Pen Lithography (EPL)

By applying electric current through a thin film of oil molecules, engineers have developed a new method to precisely carve arrays of tiny holes only 10 nanometers wide and 0.4 to 4nm deep into sheets of gold.

The new system, called Electric Pen Lithography (EPL), uses a scanning-tunneling microscope, fitted with a tip sharpened to the size of a single atom, to deliver the charge through the dielectric oil to the target surface. With EPL, the researchers can both see and manipulate their target at the same time, all without the constraints of the vacuum chamber required by similar processes.

Using the new Electric Pen Lithography technique, University of Arkansas researchers carved the letters "NSF" into a gold sheet. The holes are only 10 nanometers in diameter.

### ADVANTAGES

- Mask-correction for semiconductor applications
- Fabrication of through-silicon vias for interconnects
- TEM sample preparation
- Fabrication of conducting polymer templates
- Nano-nozzles or jets for fluid delivery

### INVENTION STATUS

Patent application has been filed and the technology is available for licensing.

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