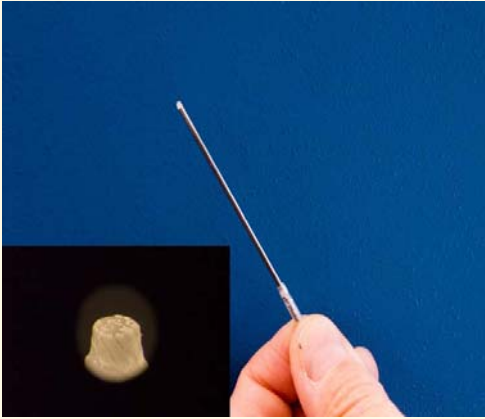


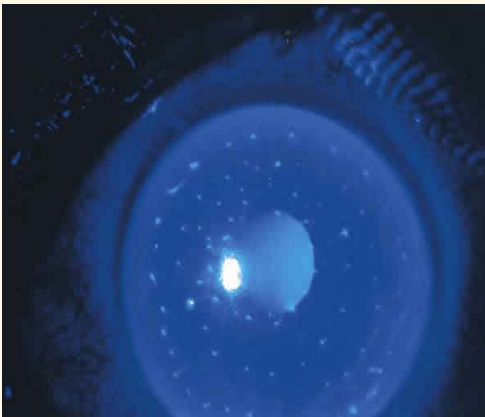
# Nano-Structured Glass for Surgical Tools

## *New Paradigm in Surgical Instrumentation for the Eye*

### Microfabricated Surgical Instrument



### Corneal Scarring from Anterior Stromal Puncture Using a 25 Gauge Needle



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 **PARTNERSHIPS**

  
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### Summary

Current treatment for corneal erosions creates deep perforations in the corneal tissue with formation of visible scars. Contiguous treatment may induce a large region of scarring with significant refractive and optical consequences for vision.

Scientists at ORNL in conjunction with the Hamilton Eye Institute at the University of Tennessee - Memphis have developed a set of novel, micro-fabricated surgical instruments. These include the "Cornea NanoPunch Array" used to enhance the healing of acute corneal abrasions and recurrent cornea erosions and "Retina Clinch" designed to remove scar tissue from the surface of the retina. These novel arrays can be fabricated to have virtually any size, aspect ratio or spacing. This disposable design permits the application of patient-specific instrument design, in which the instrument used is tailored for the patient's unique pathology (e.g. 30 micron height for a 30 micron thick membrane) to reduce the risk of retinal injury, making the surgery safer and easier. The glass array spikes penetrate the corneal surface at a specified depth and density, creating thousands of microscopic sites for cell adhesion, improving the treatment result and minimizing the risk of vision loss from the current methods

### Advantages

- Patient specific instrument design
- Micro-fabricated arrays significantly enhance the current techniques of retinal surgery
- Micro-fabricated arrays advance the technical limits of safe, reproducible and reliable retinal surgery
- Minimal scarring of corneal tissue

### Patents

- Composite, Ordered Material having Sharp Surface Features (UTB – ID 1417) , [US Patent 7,150,904](#)

  
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