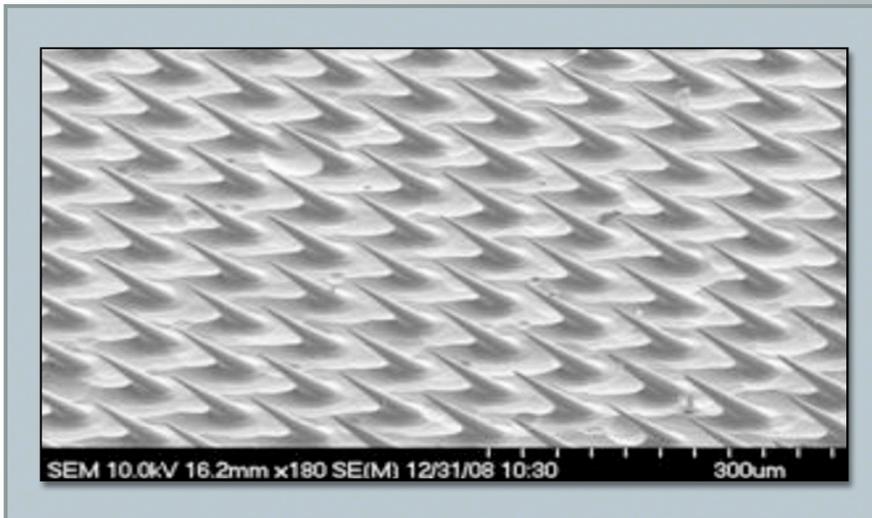


Retinal Instrument for Removing Scar Tissue from the Eye

UT-B ID 200501572



Technology Summary

The retina of the eye is only 160 to 240 microns (millionths of a meter) thick and is generally transparent. Retinal scar tissue, a common problem for the elderly, is difficult to remove successfully. Surgeons currently peel it with an instrument that can result in a vision-threatening injury when misaligned or applied with too much pressure. Significant bleeding also causes postoperative complications.

ORNL researchers have invented a glass rod microdevice that should improve the outcomes of such surgeries. The ORNL invention has several versions. It can feature a cannula, a small, reed-like tube, that is attached to an array of glass microrods arranged on a base. In another version, the array of glass microrods can include one rod that has a sharp, barb-like feature. The glass microrods are spaced 5 to 40 microns apart on a base that has a circular or multifaceted geometry.

In the ORNL-devised method, the surgeon first measures the thickness of the scar tissue, using either optical coherence tomography or Heidelberg retinal tomography. The glass rod microdevice is then crafted to the requirements of the individual patient, with the microrods cut to a length less than or equal to the thickness of the scar tissue.

To use the microdevice, the surgeon inserts the cannula or the barb and then applies the microrod array to the scar tissue in a manner similar to applying Velcro. When the array is removed, so is the tissue. The array is capable of removing a large area of scar tissue to a desirable depth.

Advantages

- Reduces the chance of hemorrhage along the internal retinal surface during surgery
- Reduces the chance of significant bleeding from an underlying blood vessel damaged during surgery
- Reduces postoperative complications
- Can engage and remove to a desirable depth a large area of scar tissue

Potential Applications

- Surgical removal of retinal scar tissue

Patent

Charles L. Britton, Brian R. D'Urso, Edward Chaum, John T. Simpson, Justin S. Baba, M. Nance Ericson, and Robert J. Warmack, *Retinal Instrument*, U.S. Patent Application 12/052,992, filed March 21, 2008.

Lead Inventor

Charles L. Britton
Measurement Science and Systems
Engineering Division
Oak Ridge National Laboratory

Licensing Contact

Gregory C. Flickinger
Technology Commercialization Manager,
Energy and Engineering Sciences
UT-Battelle, LLC
Oak Ridge National Laboratory
Office Phone: 865.241.9485
E-mail: flickingerc@ornl.gov

