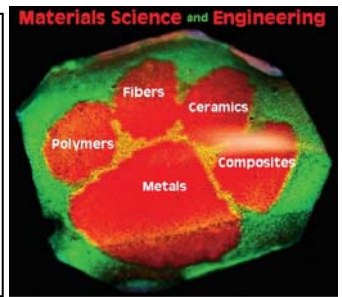


# Seminar Series

Sponsored by  
**School of Materials Science and Engineering**  
Thursday, September 27, 2007  
5:00 PM – Room 200 Olin Hall



## **Optical Applications of Glass Ceramics - Abstract**

**Jacqueline A. Johnson**

*Professor, Laser Research Center  
University of Tennessee*

### **Abstract:**

Glass ceramics offer a rich opportunity for the study of basic physics and chemistry as well as a plethora of applications. The presentation will encompass the straightforward synthesis of fluorochlorozirconate glass ceramics, seeded with barium chloride nanocrystals and doped with optically active Europium (II). Structural characterization will be described such as XRD, XANES, and Mössbauer, along with the optical properties derived from photoluminescence. The ability of the material to store electron-hole pairs will be related to the structure and optical properties. Attention will be given to future basic research and what is not known about these materials.

Applications include storage phosphor plates for mammography, up-and down-conversion plates for increasing efficiency of solar cells, and homeland security applications for neutron and gamma detection. A description of each of these applications will be provided.

### **Short Bio**

*Jacqueline Johnson obtained her B.Sc. and Ph.D. from the University of Liverpool in the United Kingdom. She worked as a professor in Liverpool until 1995 when she came to Argonne National Laboratory in the United States to study the structure of glasses.*

*After a 2-year period as Assistant Division Director of the Materials Science Division she returned full time to science to initiate the mammography project. Other current research projects include solar energy and carbon films.*

*On November 1<sup>st</sup> she will return to academia at the University of Tennessee, Laser Research Center to further the mammography research.*