

Glass Science, Processing and Optical Properties of Tellurite Fibers

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DMR-Award # 0701526



GOAL:

Develop new optical fibers for mid-infrared applications.

- *Understand the relationship* between a) composition and b) processing/ forming of the glass and the optical properties of the fiber

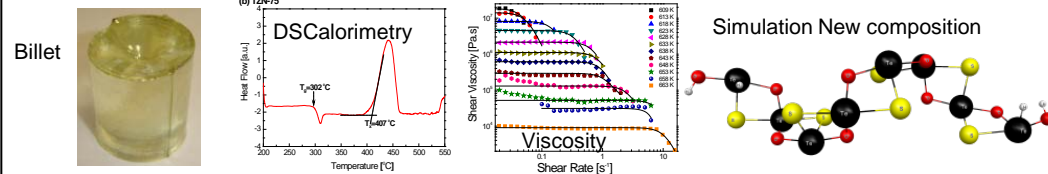
- *Train students* in an interdisciplinary & vertically integrated environment to solve complex materials problems

- *Connect with high tech applications*

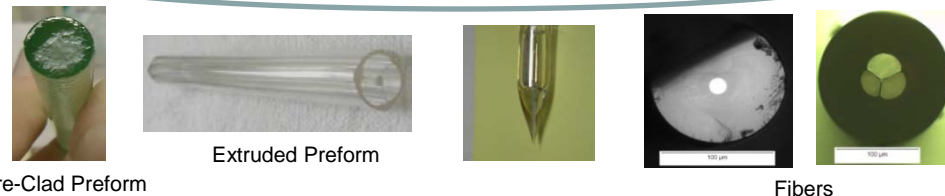


A Materials Genome Approach:

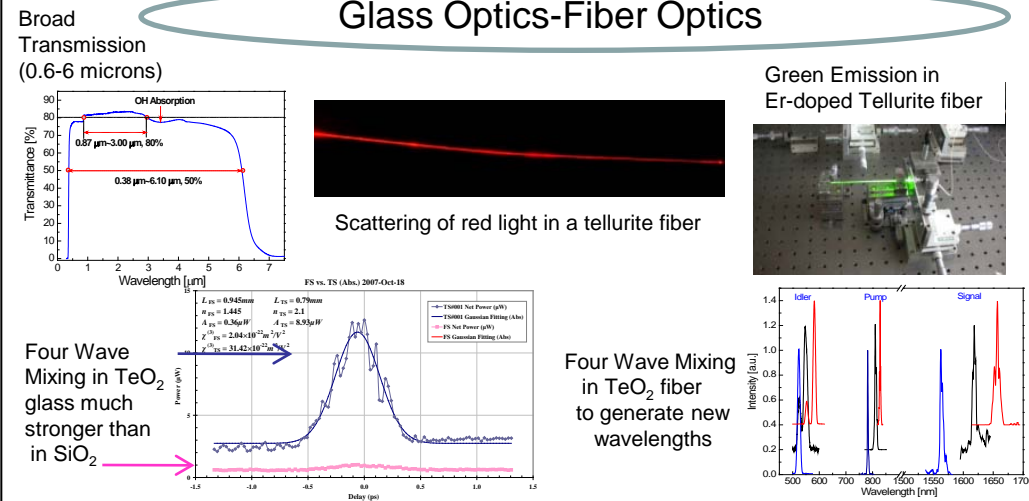
Glass Chemistry & Physics



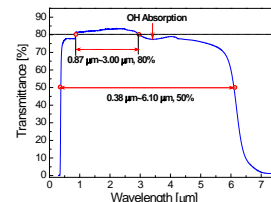
Glass Forming: Casting- Extrusion - Drawing



Glass Optics-Fiber Optics

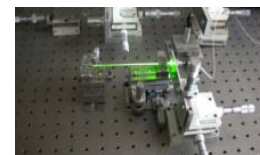


Broad Transmission (0.6-6 microns)

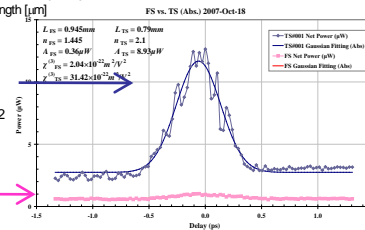


Scattering of red light in a tellurite fiber

Green Emission in Er-doped Tellurite fiber



Four Wave Mixing in TeO₂ glass stronger than in SiO₂



Four Wave Mixing in TeO₂ fiber to generate new wavelengths

