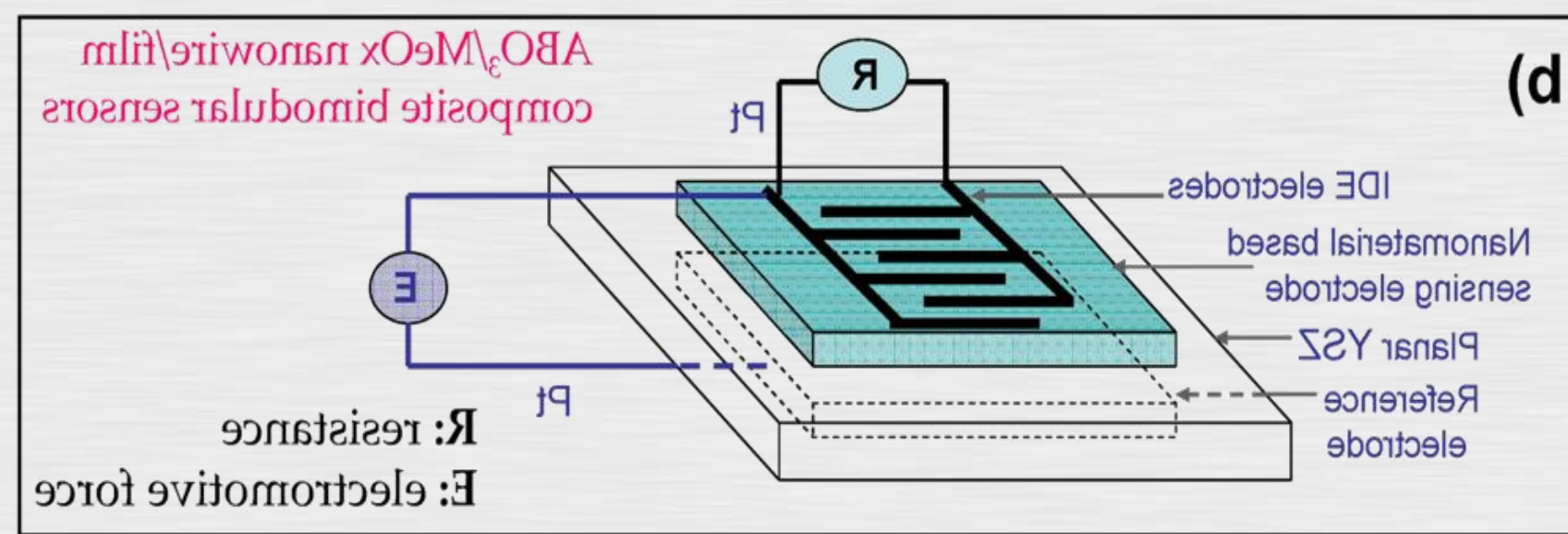
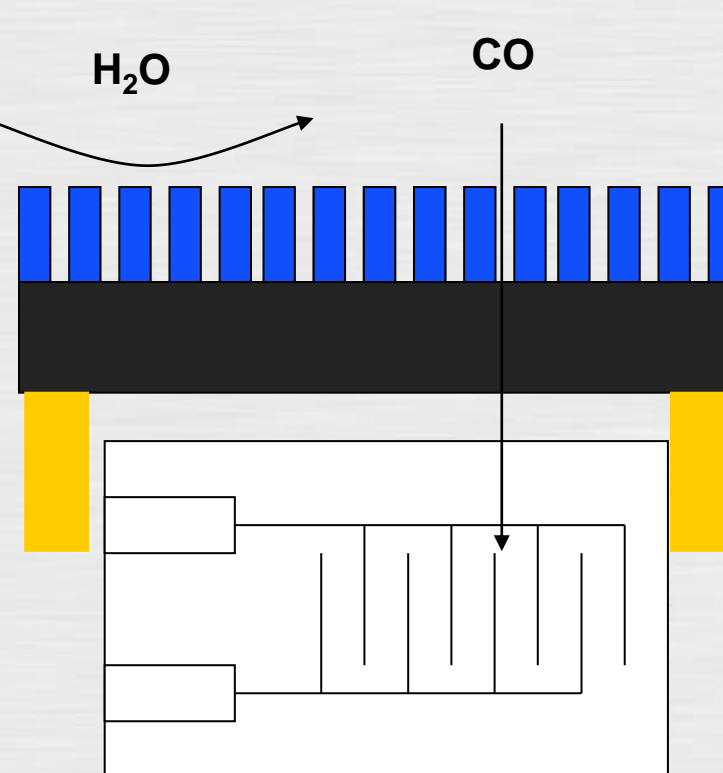
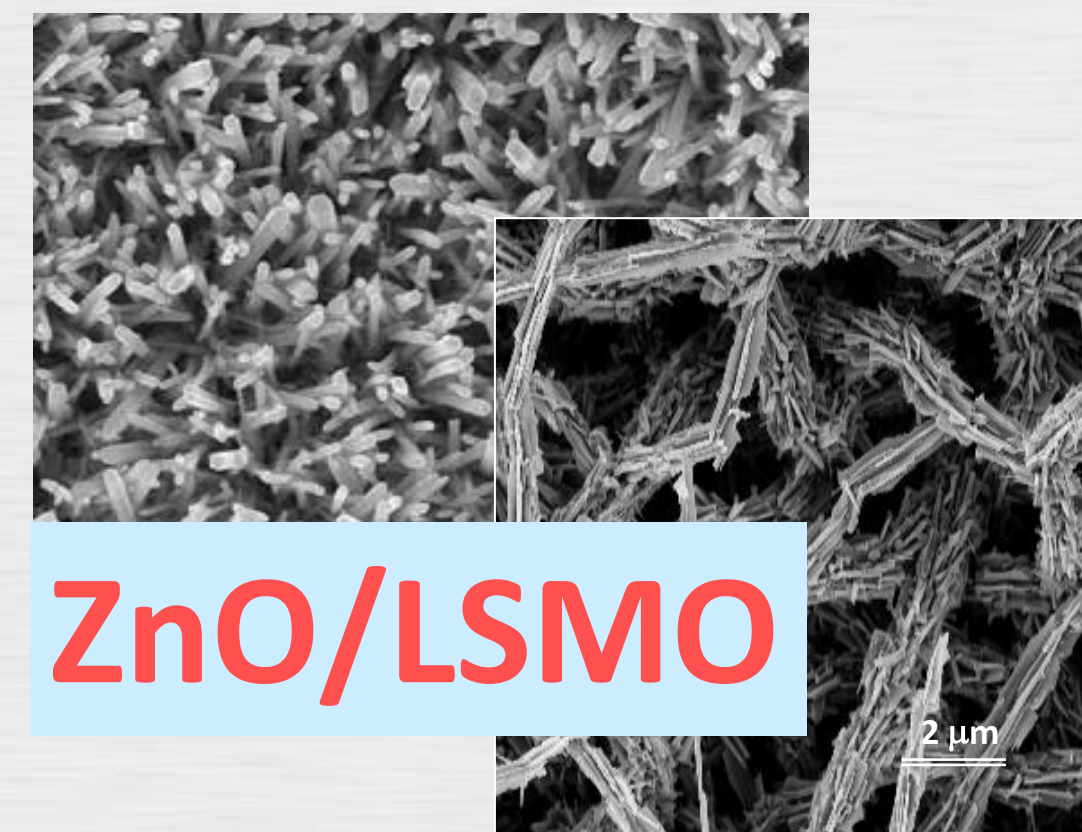
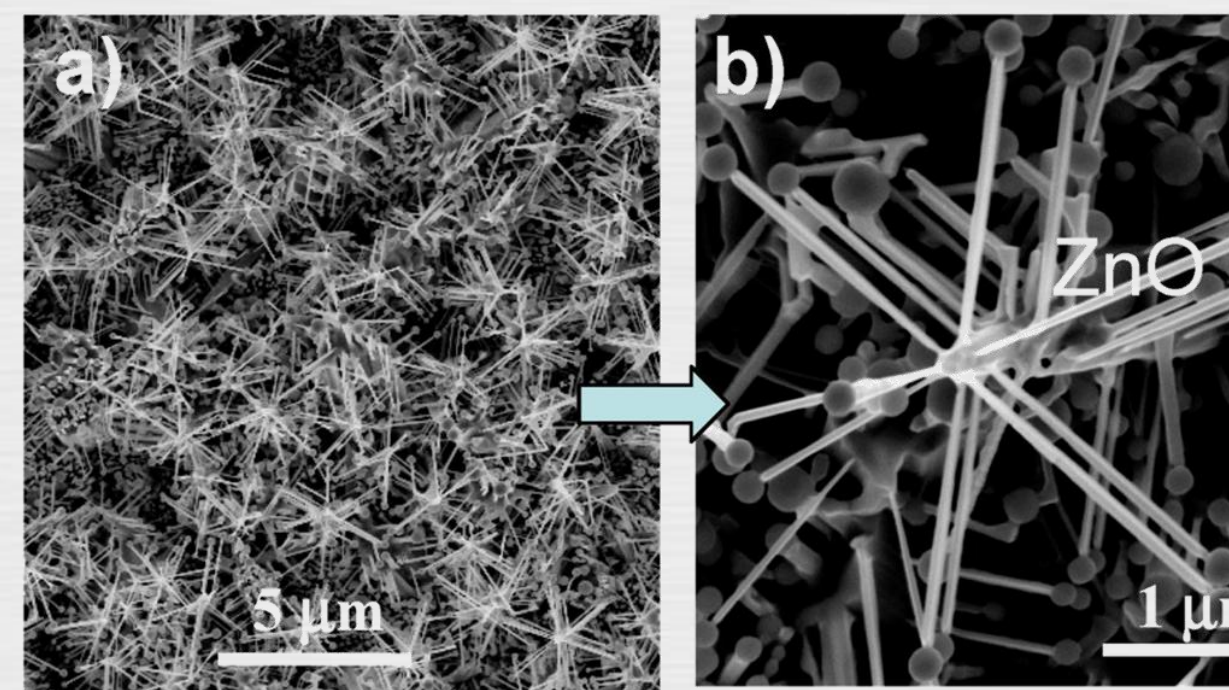


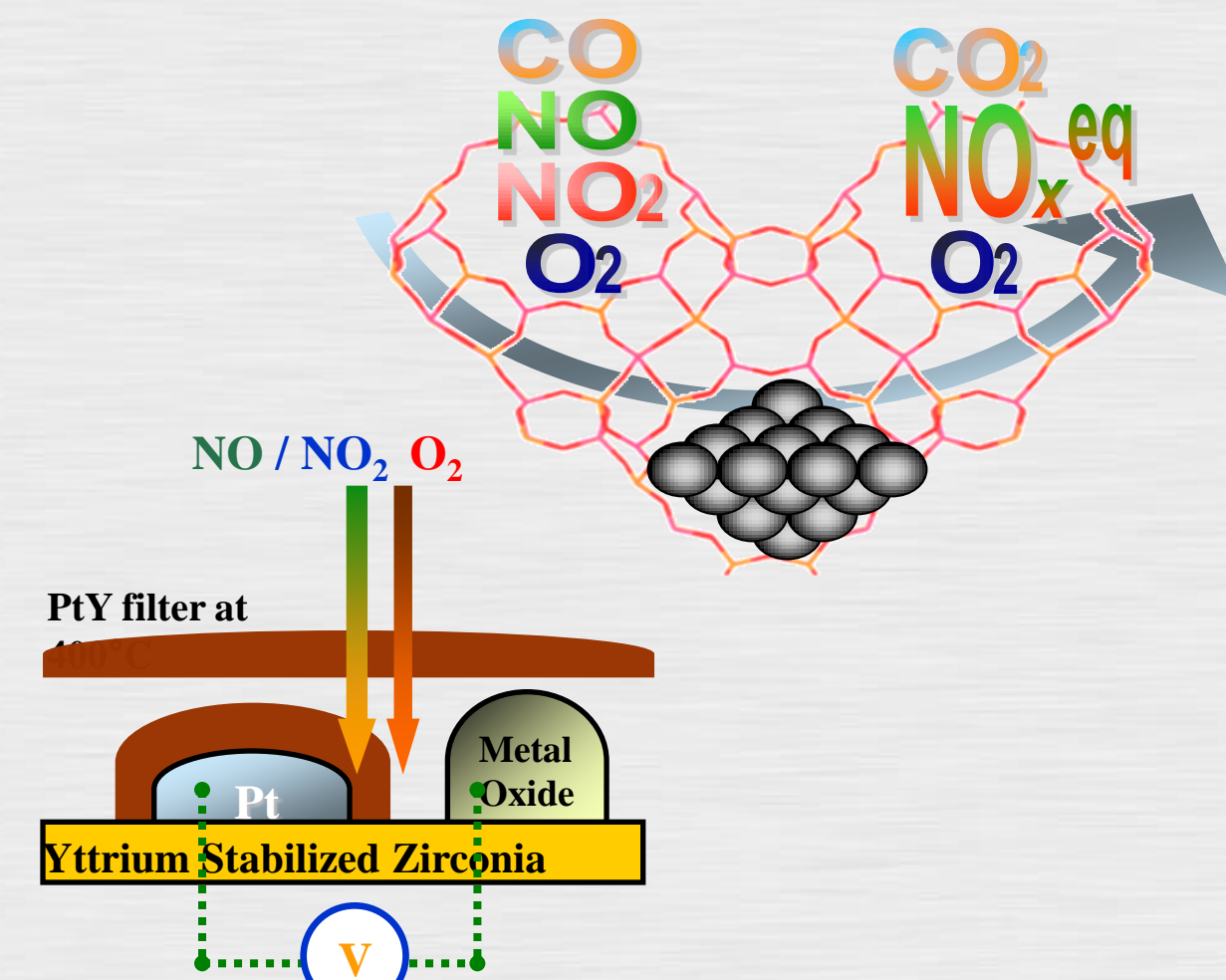
Materials for High Temperature Micro Gas Sensors



- Multifunctional metal oxide/perovskite based composite nanosensors for high temperature (700 °C -1300 °C) Gas Sensing.
- Combination of wet chemistry and vapor deposition to form nanowire / nanodendrite, nanofibrous films and perovskite nanofilms (University of Connecticut)



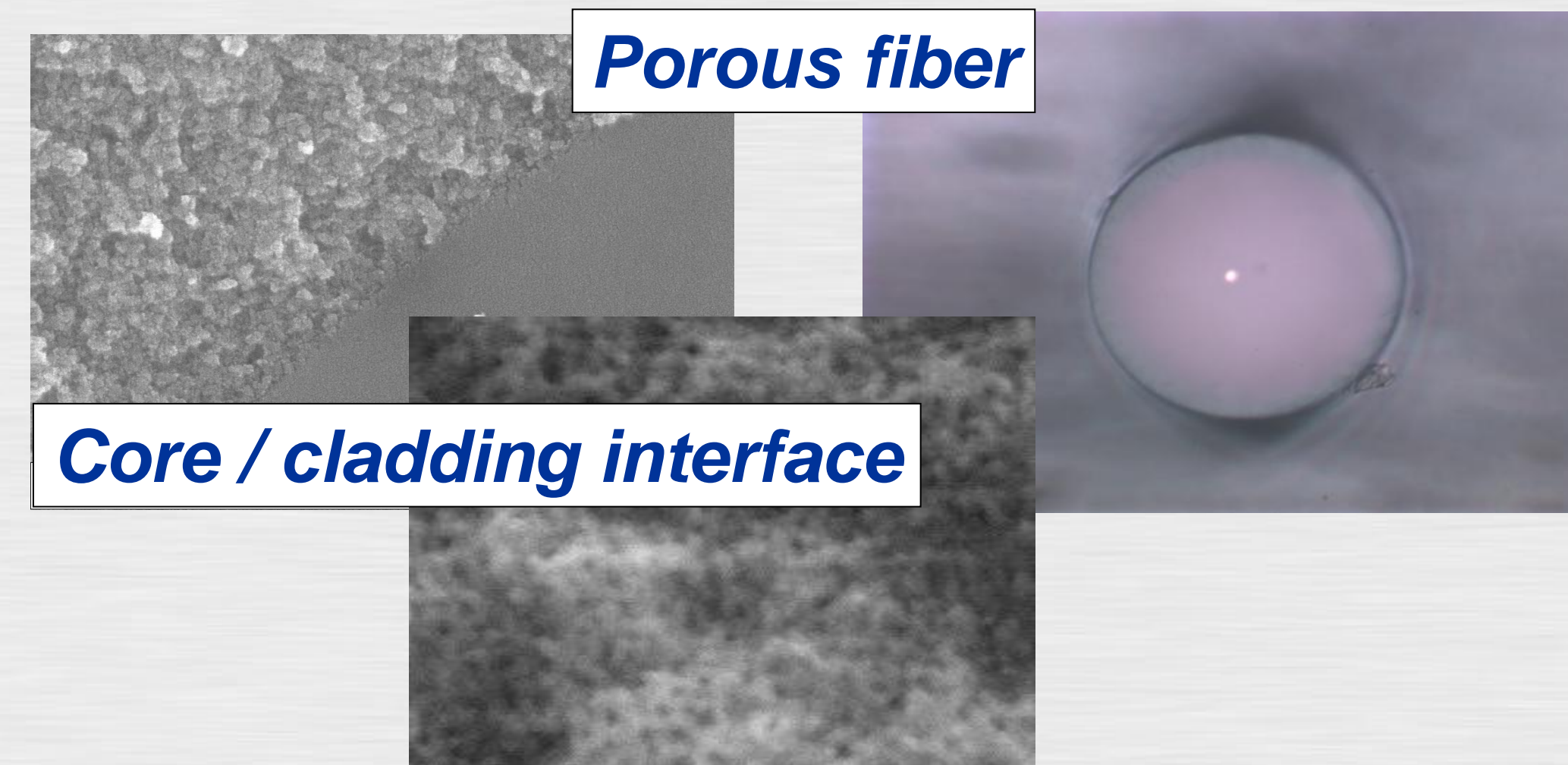
Alumina Ring
Sensor Substrate



Materials for Gas Selectivity at High Temperatures (500°C)

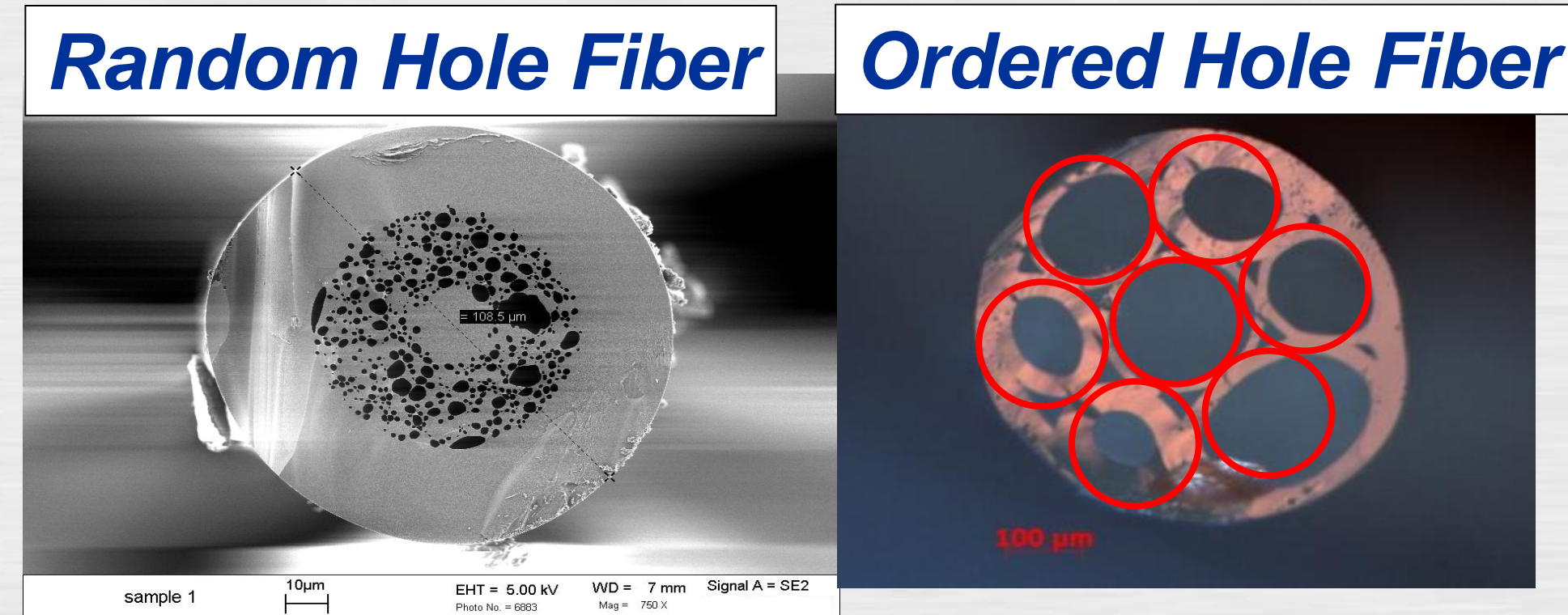
- Use nano-derived materials and apply fundamental understanding of material / gas interaction
 - Charge and/or size exclusion, selective reaction and sorption, Layering of material (Ohio State University)

Optical Fiber Material Development



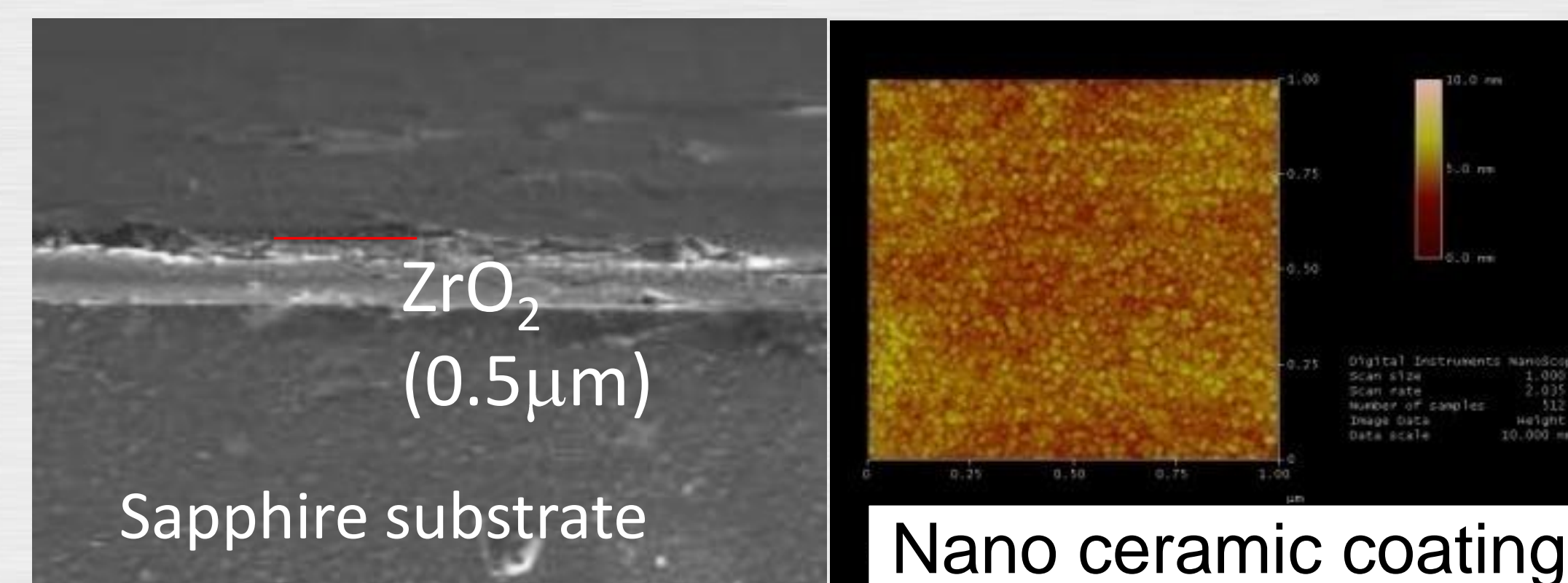
Development of Novel Silica and Sapphire Fiber Material

- Interaction of the evanescent wave with gas molecules results in a characteristic absorption spectra
- Significant improvement in sensor response time with porous fiber
- 3-D porous photonic crystal fiber capability (Virginia Tech CPT)

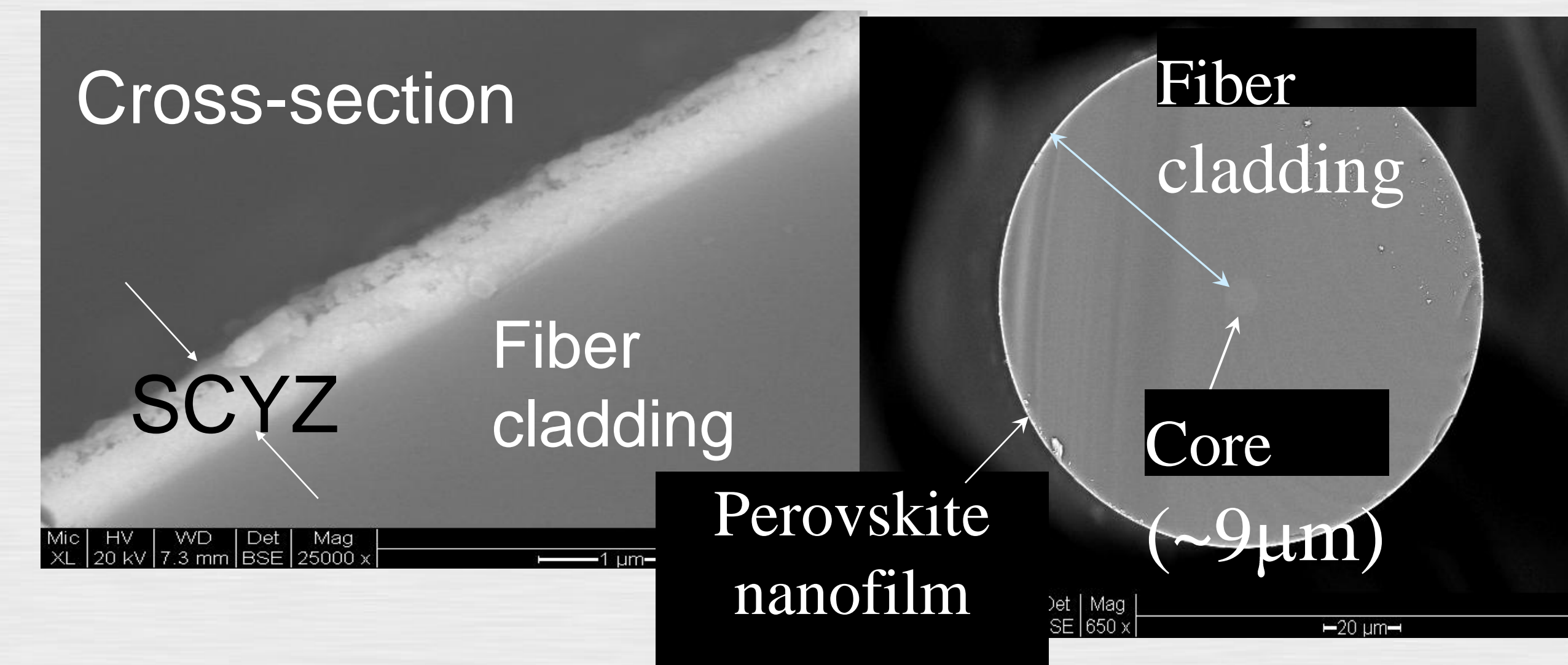


Micro Machining and Coating of Silica and Sapphire Fiber

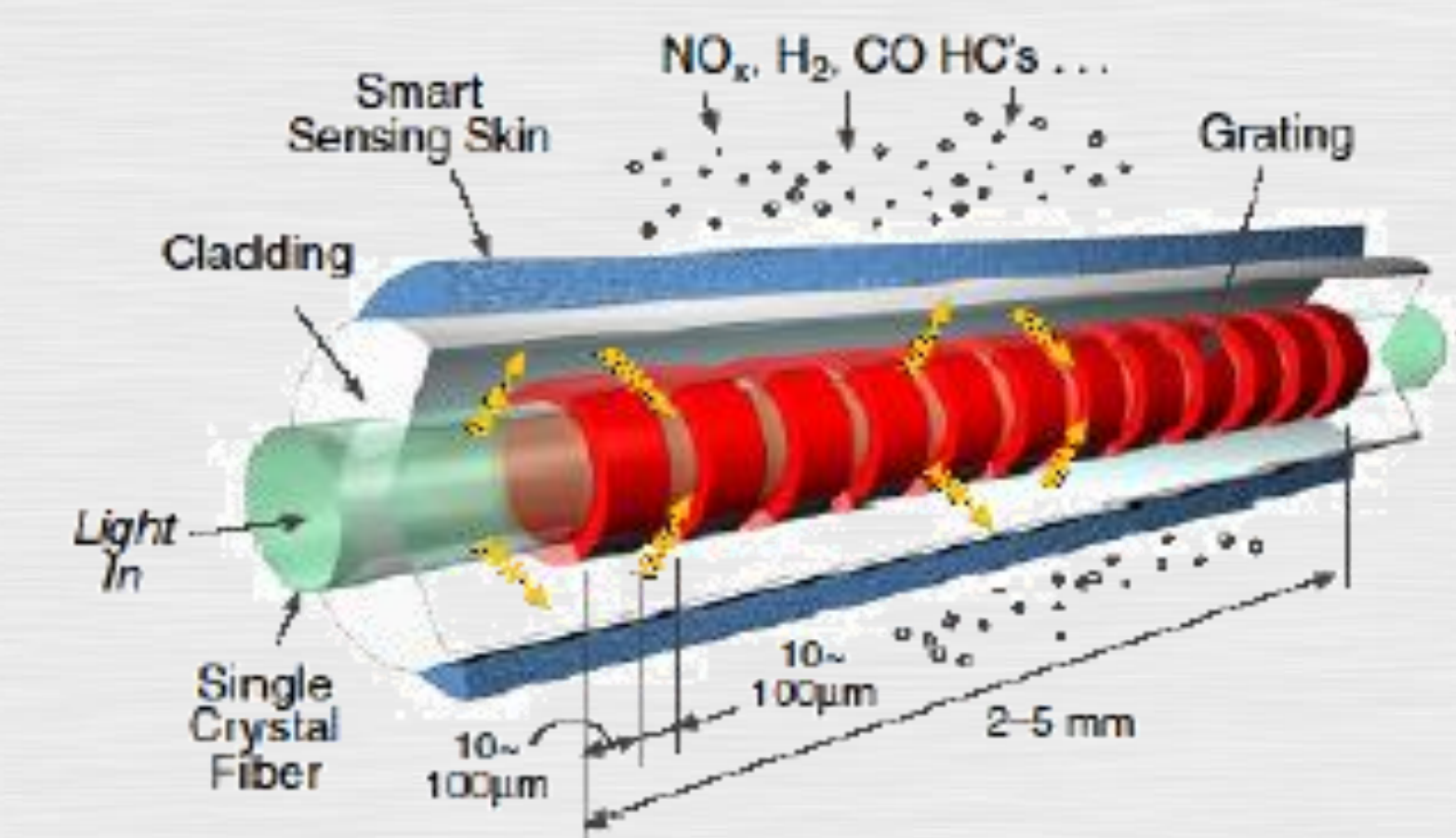
- Cladding sapphire fiber with nano coatings
- Novel ceramic nano thin film coatings as double-layer cladding. (MST and UC)



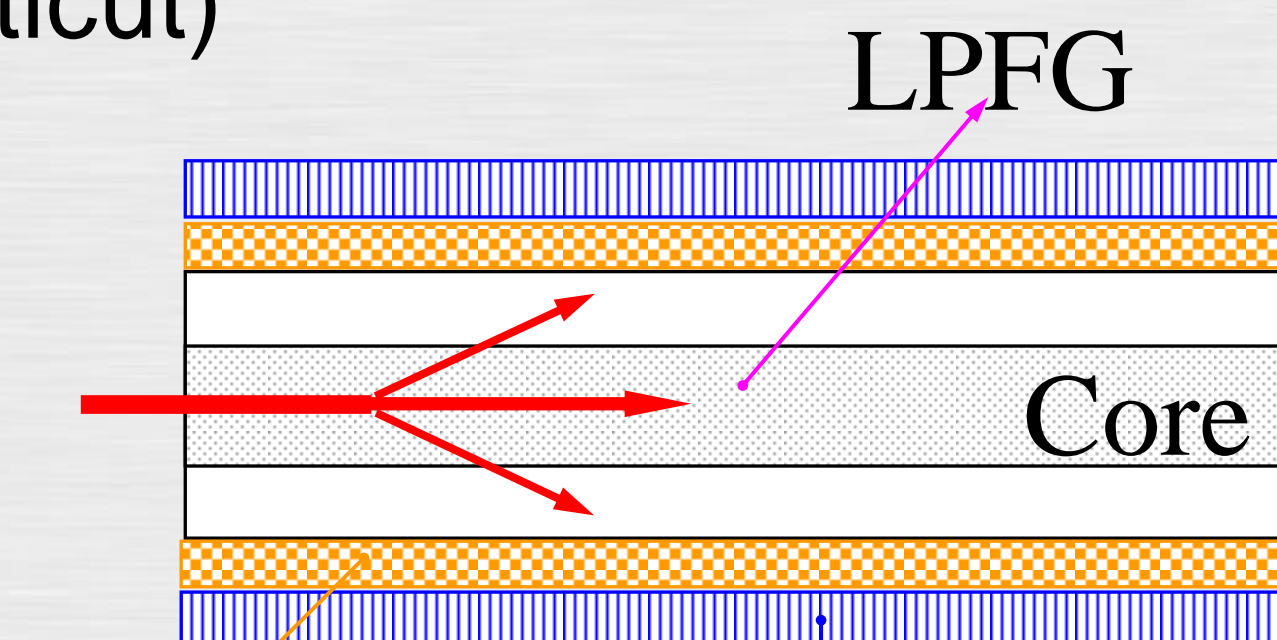
Materials for Coating Fibers



Fiber Gas Sensor Integration



- Create high gratings into Silica Fiber
- Coat fibers with gas sensitive films stable at high temperatures (ASU, GE, MST, NMT, and University of Connecticut)



Ceramic film

Protection film

