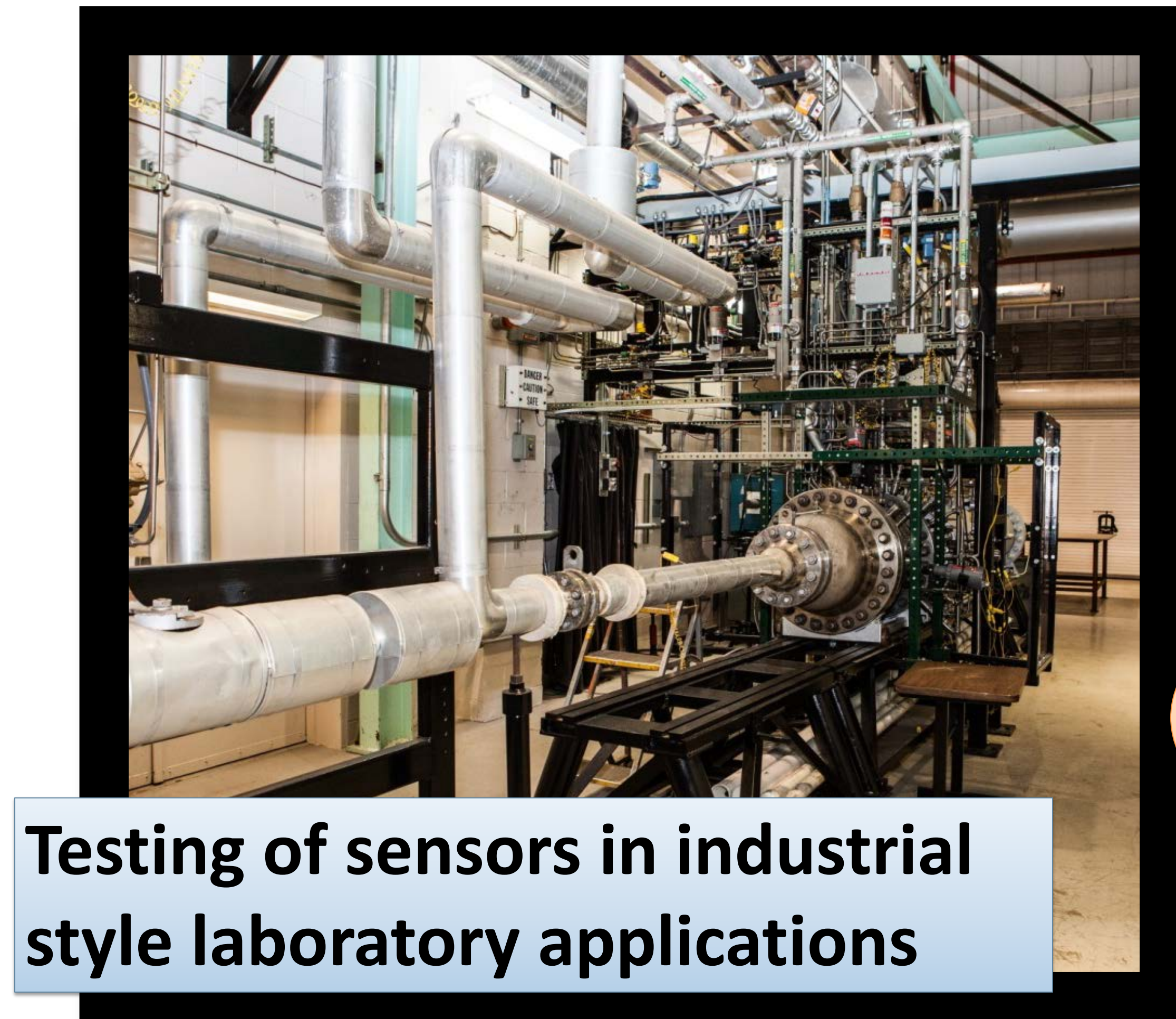
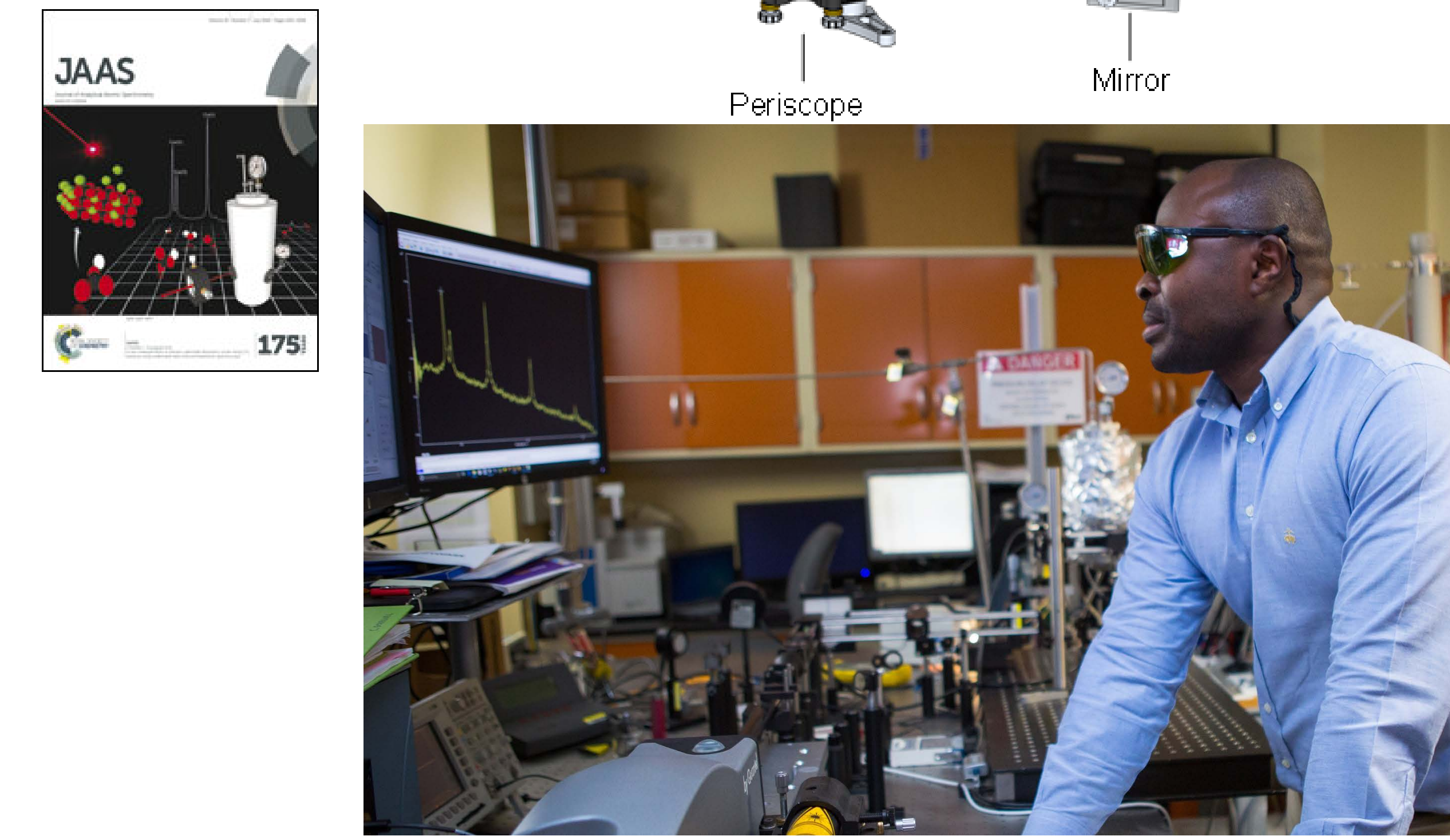
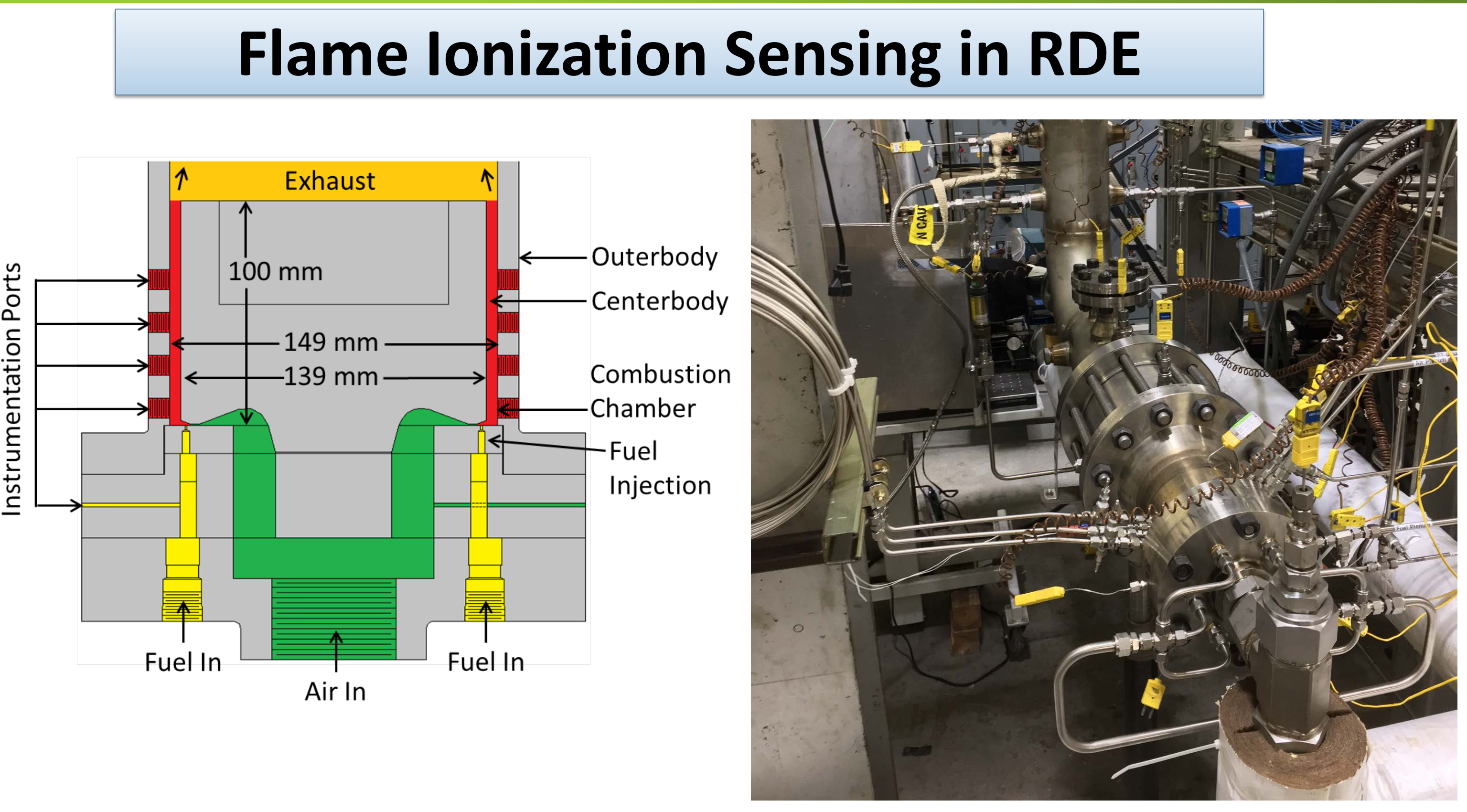
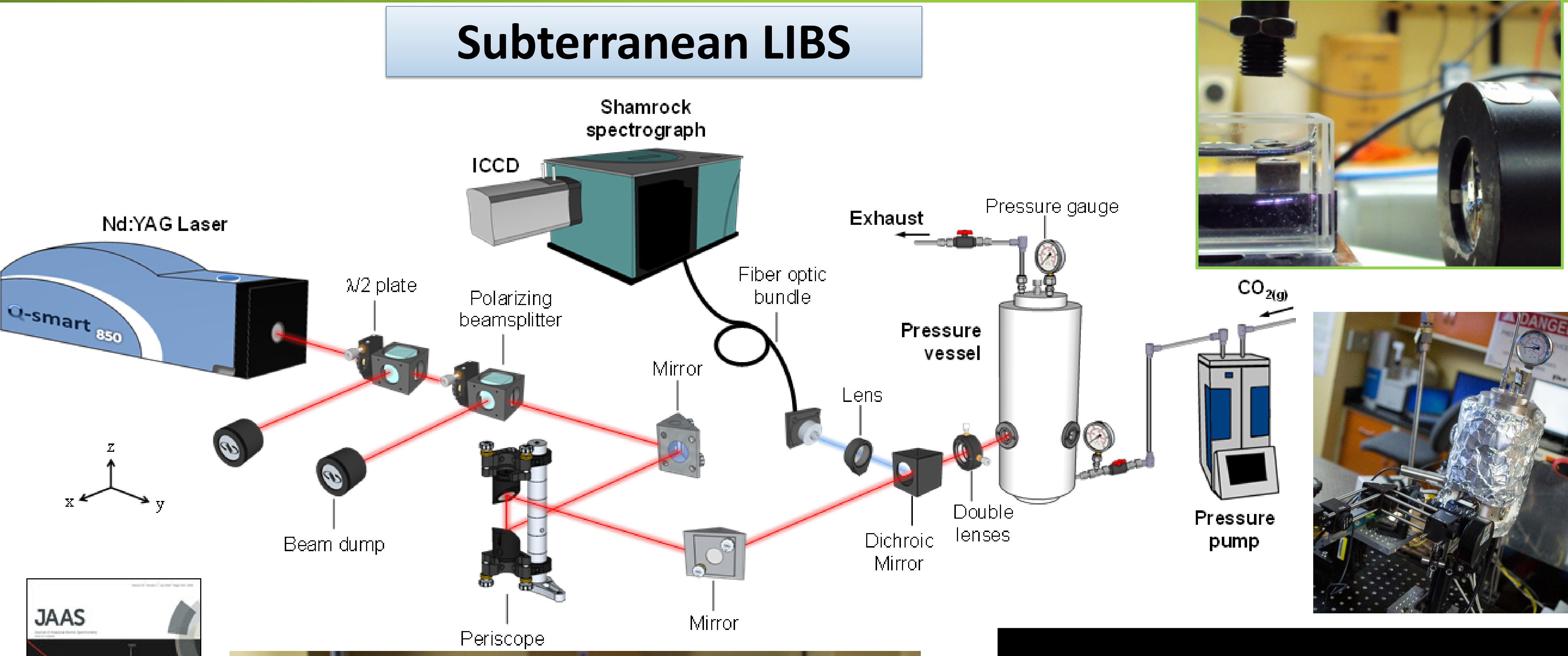


Diagnostics and Sensor Applications in R&IC Research

Ben Chorpening, Michael Buric, Juddha Thapa, Amy Falcon, Jared Charley, Christian Goueguel, Dustin McIntyre, Steve Woodruff, Doug Straub



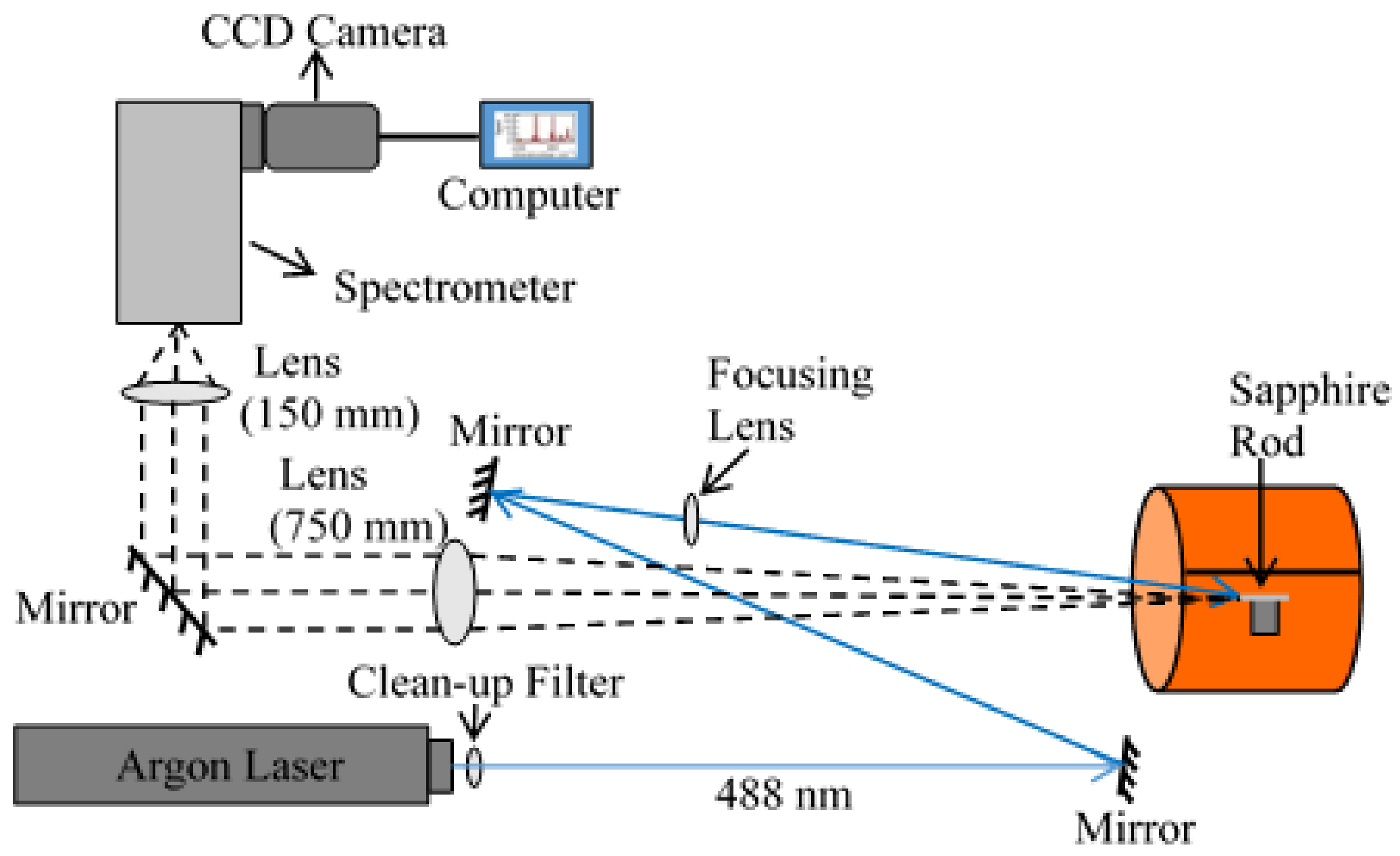
Raman Gas Analyzer

Uses hollow reflective-lined capillary waveguide as a sample cell
 Simultaneously measures:
 $\text{CH}_4 - \text{C}_4\text{H}_{10}$, CO , CO_2 , H_2 , N_2 , O_2 , H_2O

Tech Transfer Opportunity

Field Prototype
 800 psig, 200°C
 1 second response
 Modified for NEC Class I, Div 2

Raman Spectroscopy for high surface temperature measurement



TDLAS for studying Coal Bed Methane production enhancement

Microwave Doppler for high temperature solids flow



High Temp Optical Fiber Sensors: see Paul Ohodnicki's presentation on March 22