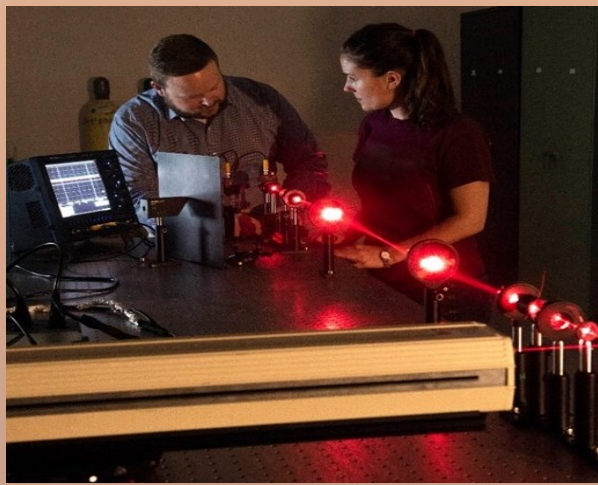


Flow Diagnostics Laboratory

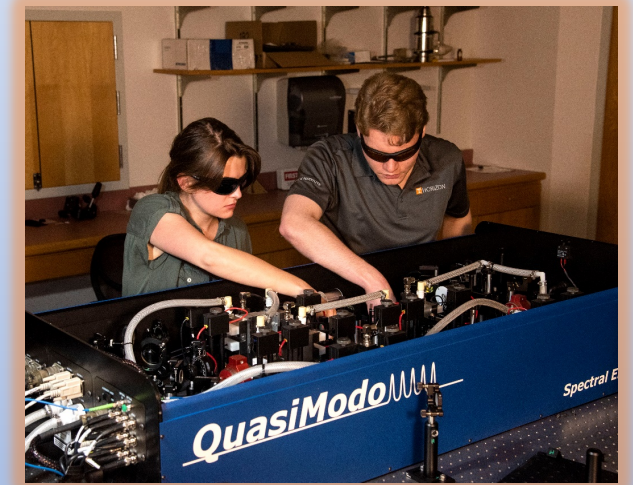
The Flow Diagnostics Laboratory is used by the hypersonics research team to prepare & test diagnostics for use in the high-speed wind tunnels and to demonstrate novel diagnostic capabilities on a laboratory scale. Optical diagnostic techniques commonly used by the researchers include: high-speed schlieren and shadowgraph, fast-response pressure-sensitive paint (PSP), laser-induced fluorescence (LIF), particle image velocimetry (PIV), and focused laser differential interferometry (FLDI). These techniques provide crucial information such as flow velocity, temperature, density, and more. The optics laboratory allows the group to explore the feasibility, resolution, and accuracy of these systems on small-scale experimental configurations prior to their deployment in the various high-speed wind tunnels located at UTSI. Notable equipment used in the lab includes: a Spectral Energies Pulse-Burst Laser (up to 1 MHz), Continuum Surelite PIV Laser (10 Hz, Dual Pulse), and several high-speed cameras and intensifiers.



A focused laser differential interferometer (FLDI) can be used to measure disturbances within high-speed flows with spectral resolution exceeding several MHz.



A PhD student works to align a supersonic nozzle in the measurement region of a high-speed schlieren system.



Two PhD students are tuning a 1-MHz pulse-burst laser. UTSI is one of a few academic institutions with a pulse-burst laser system.