Composites Fabrication Capabilities: The laboratory provides advanced capabilities that are not found elsewhere in south Texas. The 1100 ft² lab has a three-axis Entec-CMC filament winder that will wind parts up to 8 ft., a 33 cubic foot capacity Grieve curing oven (~400°F), hand lay-up, and vacuum-assisted resin transfer molding capabilities. Vibration testing (natural frequencies, modal analysis, damping) is available. Other test equipment (UTM, Impact, Fracture, etc) is available in adjacent labs. Computer workstations enable linear & nonlinear (material and geometric) classical lamination analysis, and finite element analysis of composite structures.

Faculty Research: Composite aerospace structures, commercial composite structures, ballistic composites (composite armor), composite rocket motor casings, and considerable work with flexible (elastomer matrix) composites. Flexible composite work includes high Poisson’s ratio and negative Poisson’s ratio (auxetic) laminates, fabrication and testing of highly damped structural components, fracture-resistant structures, development of biomimetic “rubber muscle” actuators, refinement of related manufacturing processes, and development of nonlinear flexible composites analysis software.