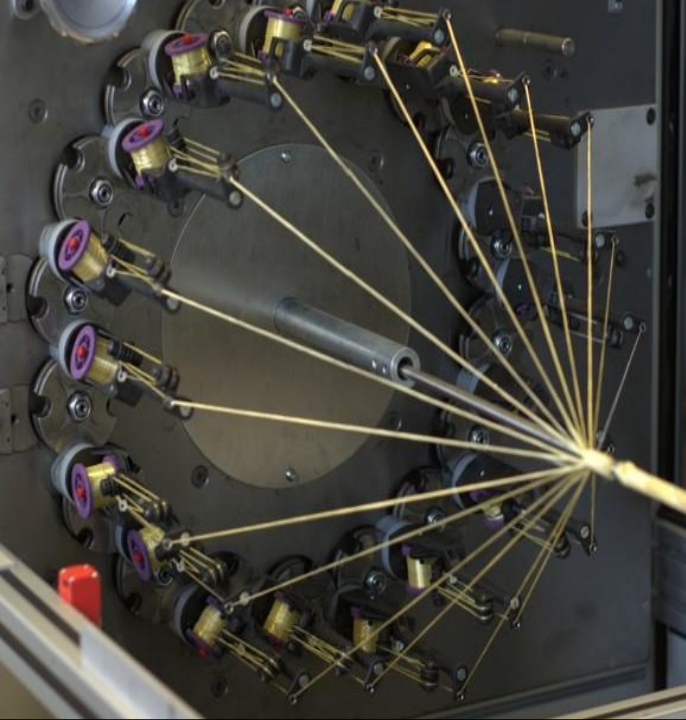




**FACULTY OF
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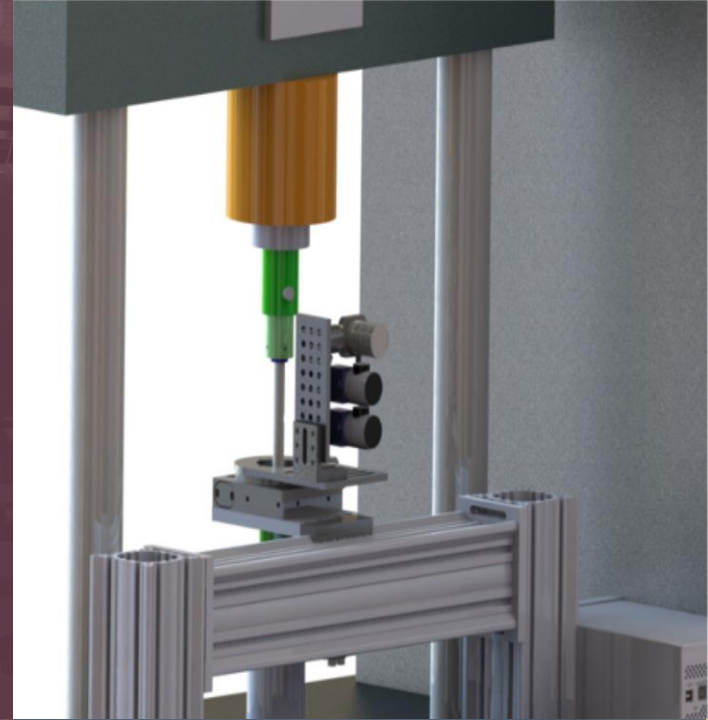
MULTIPURPOSE COMPOSITES GROUP

DEPARTMENT OF
MECHANICAL
ENGINEERING



Manufacturing Capabilities

- Biaxial braids
- Triaxial braids
- Open mesh
- Closed mesh
- Hybrid and comingled thermoplastic (multi-fiber braids)
- Continuous braid production and curing



Group Expertise

Our group specializes in:

- Composite braid manufacturing
- Theoretical braid model development
- Experiment design and advanced measurement techniques
- Rapid design and evaluation of braid samples



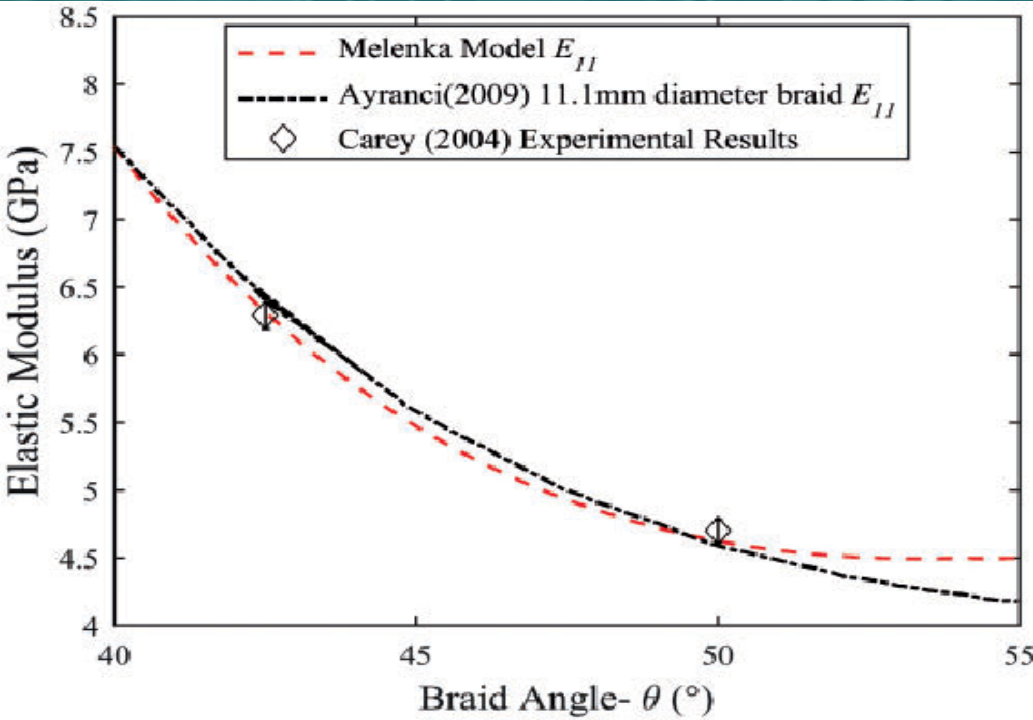
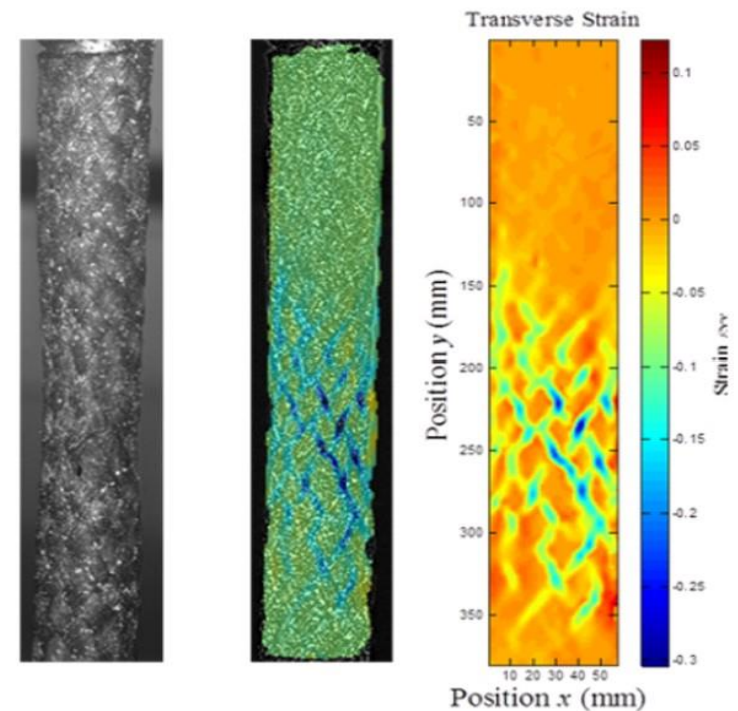
Testing Capabilities

Our facility features customizable testing apparatus to meet product evaluation requirements. Braid samples testing in compliance to ASTM and ISO standards.



Composite Testing & Evaluation

Advanced optical measurement techniques are beneficial for quantifying the complex behaviour of tubular composite braids



Braid Analytical Modeling

Analytical models have been developed to predict tubular braided composite behaviour

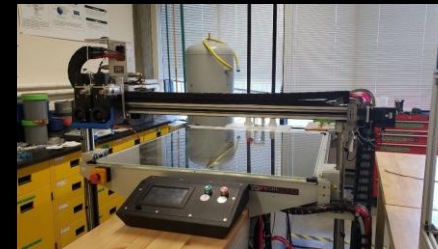
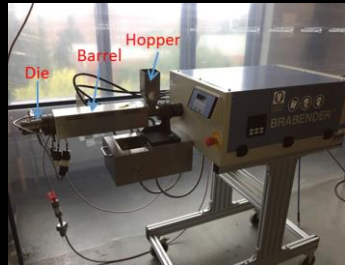
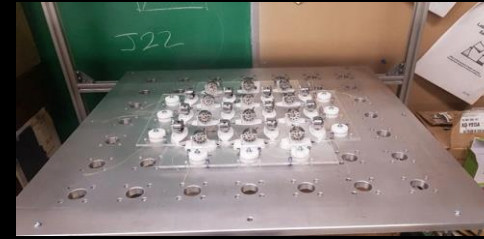
- Models are experimentally validated
- Simple and adaptable
- Require minimal computation power

Multi-functional Composites Laboratory

Led by Dr. Cagri Ayranci and Dr. Jason Carey, the Multi-functional Composites Laboratory researches composite materials, 3D printing, shape memory polymers and electrospinning.

The available lab equipment includes:

- 2-Dimensional Braider / Pilot Scale Rebar Production Facility
- 3-Dimensional Braider
- Brabender Filament Extruder and The Take up Mechanism
- Thermomechanical Tester (Bose) 2.5 N, 10 N, 450 N Load Cells
- Vacuum Oven
- Melt Electrospinner
- Mini Injection Molder
- Large Scale Extrusion Based AM Machine
- Desktop-size Single Head Extrusion Based AM Machine - Ultimaker 2
- Desktop-size Dual Head Extrusion Based AM Machine - Ultimaker 3
- Rotating-Drum Electrospinner





Research Group Biography

Professor Jason Carey, PhD., P.Eng

20+ years' experience in design, experimental testing and analytical modeling of braided composites

Associate Professor Cagri Ayrançi, PhD., P.Eng

Modeling of braided composites to predict behaviour in open and closed mesh configurations

Contact

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Principle Investigator

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