



# Faculty Member

## Timken Foundation Center for Precision Manufacturing

### Contact Information



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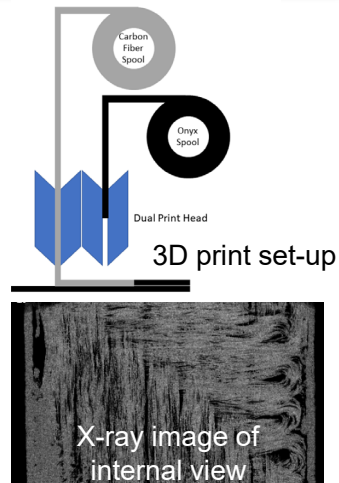
### Research Interests

- Design and characterization of composite materials
- Additive manufacturing of carbon-fiber reinforced polymer
- Reveal process-property-performance relationships
- Composites in extreme environmental conditions
- Design micro-nano structures for elastic wave control
- Design of bioinspired structures and surfaces
- Mechanical metamaterials with unusual properties

### Sample Research I:

#### Additive Manufacturing of Composite Materials

- Carbon-fiber reinforced polymer (CFRP) is a commonly used in aerospace, automotive, and sports applications, due to its light-weight and high-strength characteristics.
- However, traditional method of manufacturing CFRP does not allow easy fabrication of complex shape and complicated geometry.
- This research is addressing the need to fabricate CFRP based on customized complex shape using the art of additive manufacturing technology.



### Sample Research II:

#### Bioinspired Design of Patterned Surfaces

- Material surfaces are important for effective adhesion and strong traction performance for structural and automotive applications.
- However, traditional approach to create and engineer surfaces has reached its design limitation.
- This research is addressing the needs for designing high-performance surfaces by mimicking natural surfaces in biological models.

