

# Working With Textile Carbon Fibers (TCF)

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Doug Bradley, MSU

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U.S. DEPARTMENT OF  
**ENERGY**

Advanced  
Manufacturing



 **OAK RIDGE**  
National Laboratory

# Carbon Fiber Technology Facility Overview

*The Carbon Fiber Technology Facility (CFTF) serves as a national resource to assist industries in overcoming the barriers associated with carbon fiber manufacturing and intended to be the bridge from R&D to deployment to commercialization of affordable carbon for use in a range of industrial applications.*

## **Focused on demonstrating the scalability of affordable carbon fiber**

- 42,000 ft<sup>2</sup> facility with production capacity of 25 tons/year of fiber from multiple precursors in various forms

### Vehicle Lightweighting

Reduce vehicle weight by using carbon fiber throughout body and chassis



### Wind Energy

Build turbine components and longer blade designs for applications in wind energy



### Gas Storage

High-strength, lightweight pressure vessels for storage of gas



### Recreational Equipment

Next-level performance for sporting goods and recreational equipment



# Technical Approach and Collaboration

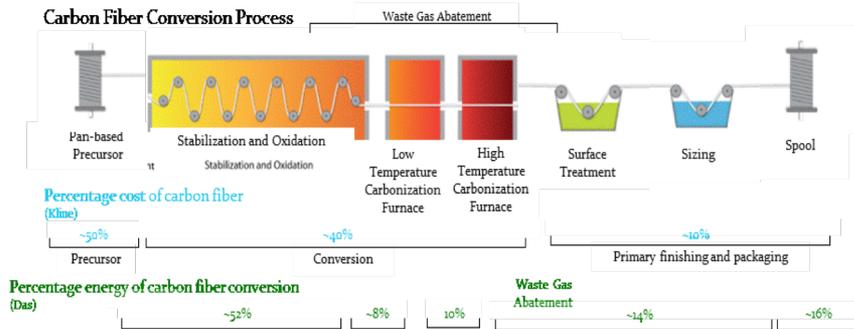
## Material Identification

Textile Pan-based Precursor



- Identify high potential, affordable alternative precursors
  - Availability, Yield%
  - Costs, processability
- ~ 26 varieties of textile precursor
- ~5 Textile suppliers

## Scale-up CF Line



- Develop optimal mechanical properties of resultant carbon fiber from alternative precursors and correlate structure-property relationships.
- Reduce Costs Drivers (raw material, capital, & energy)
  - Process Science
  - Increase Throughput
  - Improve CF Properties
  - Process simulations

## Carbon Fiber Forms

Standard & Intermediate Modulus



- Provide sample quantities with favorable properties to industrial partners for testing based on DOE approval

## Collaborative Projects

- Integrated approach to low-cost carbon fiber manufacturing R&D
- Individual R&D projects
- Collaborative R&D consortia
- Early-stage R&D and technology
- partnerships
- Industry Collaborations



Ever Growing Partnerships: Integrating the AM Supply Chain

- Address feedback from industrial partners

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Thank you

Please visit exhibitors and intern  
posters during the break.

Lunch is served in the foyer.