



Advanced Fiber Manufacturing Group

Developing scale-up science and technologies for fiber manufacturing

Technical Area Overview

The Advanced Fibers Manufacturing Group at Oak Ridge National Laboratory works with the Carbon Fiber Technology Facility (CFTF), the Department of Energy's only designated user facility focused on carbon fiber innovation. The facility provides researchers with a platform for identifying high potential, low-cost raw materials, including textile, lignin, polymer, silicon carbide, and hydrocarbon-based precursors. The CFTF supports the technology development and commercial deployment of advanced fibers in the United States for use in clean energy applications. Additionally, research focuses on further understanding the kinetics of advanced fiber manufacturing, energy consumption, and the environmental impact.



APPLICATION AREAS

-  AUTOMOTIVE
-  HEALTHCARE
-  NUCLEAR ENERGY
-  WIND ENERGY
-  DEFENSE RELATED
-  COMPRESSED GAS STORAGE
-  INFRASTRUCTURE

Research and Development

Advanced Fiber Manufacturing

- Creates low-cost alternative precursors for advanced fiber manufacturing
 - 65 tons capacity melt-spinning/blowing precursor line
- Tailors advanced fibers for performance enhancement in composite applications
 - 50 ton/yr capacity flexible carbon fiber processing line
 - Silicon carbide fiber processing prototype line
- Utilizes novel data analytic framework, including in-situ measurement techniques for fiber processing techniques to reduce processing times, cost, and energy

Research Highlights/Impacts

- Breakthrough in carbon fiber development using textile pan-based precursor fibers resulting in licensed technology.
- ORNL industry collaboration in COVID-19 initiatives enabled a U.S. supply chain of filter media, surgical and N95 masks; created 1500 jobs, and furthered development of antiviral masks.

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CONTACT

Merlin Theodore, Ph.D.
 Group Leader, Advanced Fiber Manufacturing Group
 Oak Ridge National Laboratory
 Manufacturing Science Division
 865-576-6569
 theodorem@ornl.gov
 One Bethel Valley Road,
 Oak Ridge, TN 37830



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