TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.

High Performance Fiber Center of Excellence (HPFCoE) Overview
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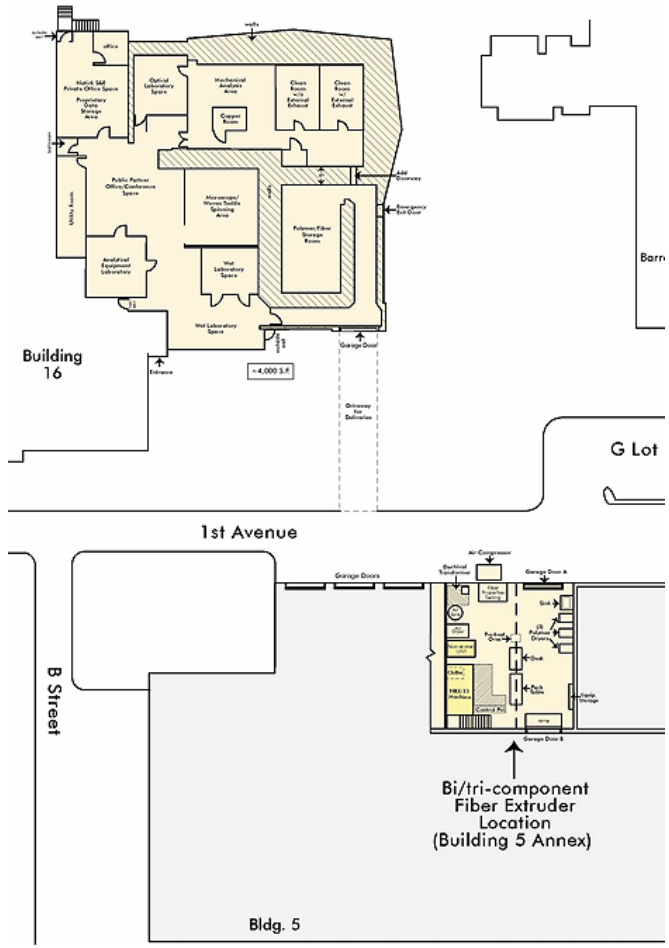
High Performance Fiber Center of Excellence (HPFCoE)

This facility will:

- Combine NSRDEC, academia and industry expertise in novel fiber/textile technology to invent and rapidly transition new materials to Warfighters and First Responders
- Attract significant R&D and manufacturing dollars to Massachusetts and New England that can be leveraged by the Army to yield new Warfighting capabilities
- Facilitate recognition of this Center as a World Leader in high performance fiber/textile technology and enable continued installation growth



Bi/Tri-Component Fiber Extruder

High Performance Fiber Center of Excellence - Equipment

MOLECULAR/ATOMIC STRUCTURE


X-Ray Diffractometer

Nuclear Magnetic Resonance Spectrometer (NMR)

OPTICAL ANALYSIS


Pulsed Laser

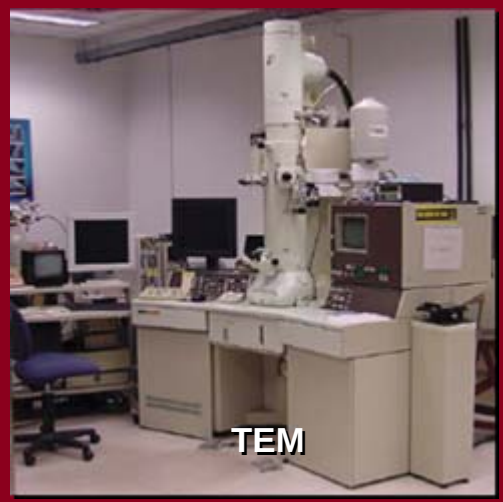
MECHANICAL ANALYSIS


Instron

MICROSCOPY


SEM


ESEM

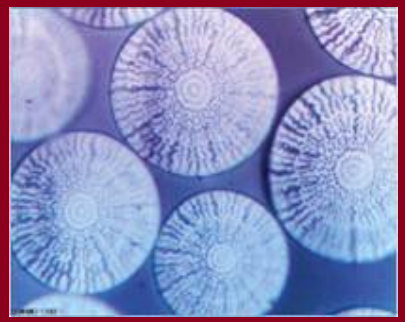

TEM

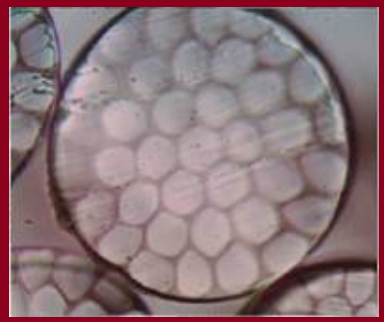

Atomic Force Microscopy

TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.

High Performance Fiber Center of Excellence – Novel Fiber Technology

BICOMPONENT ISLANDS-IN-THE-SEA (INS) FIBERS



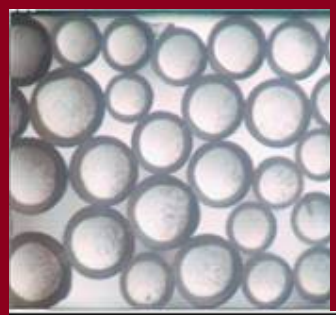


Applications: Production of melt processed nano- or micro-fibers

SIDE-BY-SIDE TRI-COMPONENT FIBERS

Applications: Create new fiber shape or compatibilize two different polymers

BI/TRI-COMPONENT SHEATH/CORE FIBER



Applications: Concentration of reactive components at the surface of the fiber or putting a conductive material in the core, surrounded by an insulating material (CB decontamination, antimicrobials, friend vs. foe ID, sensors, electronic textiles)

Novel Bi/Tri-Component Fiber Development at NSRDEC

- **Optical Fibers**
  - **Retroreflector Fibers for Friend vs. Foe ID**
- **Electronic Fibers**
  - **Molten Metal Core/Polymer Sheath Fibers for E-Textile Applications**
- **High Strength Fibers**
  - **Islands-in-the-Sea Nanofibers for Soft Armor or High Strength/Impact Composites**
- **Flame Retardant Fibers**
  - **New Polymers or Nanoparticle Additives for Improved FR**
- **Reactive Fibers**
  - **Tricomponent Fibers for Smart Insulation**