



CHEMICAL TECHNOLOGY TEAM

OVERVIEW:

The Chemical Technology Team provides state-of-the-art advances in chemical and biological (CB) protective materials and ensembles. Our staff collaborates with government agencies and laboratories, universities and industries on projects that range from basic research to field demonstrations and Soldier system integration.

CAPABILITIES:

Our testing facilities range from the macroscopic in materials development and lab-scale swatch characterization to prototype ensemble evaluation. The expertise of the team not only includes developing novel CB protective materials and incorporating them into fabric/textile systems, but also transitioning the technology into a complete system of protection for the Warfighter.

- Permeation laboratories: Hiden Isochema and Cahn balance for measuring sorptive properties, various cells for characterizing the barrier qualities against liquid, vapor and droplet challenges, NMR for self-diffusion, Dynamic Moisture Permeation Cell (DMPC) for water vapor transport.
- Reaction testing: reaction kinetics and breakdown products are investigated with GC-MS, LC-MS and NMR.
- Man-In-Simulant Test chamber (MIST): to assess the performance of full-body ensembles towards HD agent surrogates.
- Automated Robotic Vapor Adsorption Test (ARVAT): utilized for assessing the shelf life of current protective gear.
- Bioaerosol chamber/aerosol penetration test equipment: for the evaluation of biocidal treatments towards Bacillus spores and investigating the penetration of aerosol particulate matter through textiles and other materials.
- Automatic tilt base goniometer: for measuring surface tension and contact angle of liquids on solid and textile surfaces.

CURRENT R&D THRUSTS:

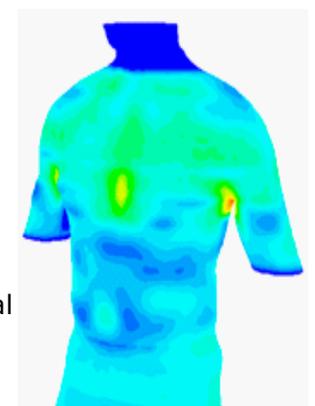
- Elastomeric barrier films and selectively permeable films, reactive membranes, multi-layered laminates.
- Adsorbents, reactive materials for the degradation of organophosphorous compounds and mustard simulants, multi-functional materials.
- Omniphobic coatings for multifunctional biocidal/sporicidal, flame retardant (FR), non-stick, self-cleaning textiles with enhanced CB protection.
- Thermal burden of materials and ensembles, heat transfer and evaporative cooling of the body.
- Protective ensembles, multi-functional fabrics, closures and venting systems.

POINT OF CONTACT:

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