

TEXTILES FOR FIRST RESPONDER ENSEMBLES

First Responders need light weight, conformable power for communications equipment, sensors, and overall body-worn electronic devices.

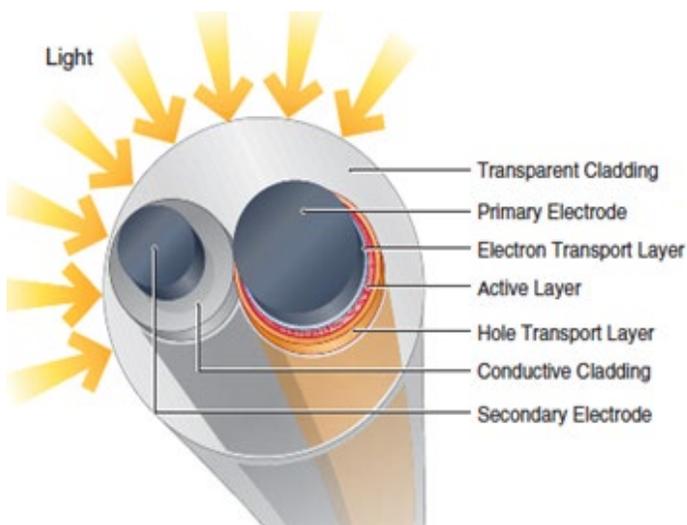
This requirement has been identified as a high priority by the Department of Homeland (DHS) Security Science and Technology Directorate's First Responder Resource Group (FRRG).

DEVELOPMENT APPROACH AND IMPACT

Silica-based solar cells are heavy and rigid. Most thin film solar cells have poor flex life, are not breathable, are low efficiency, and cannot be integrated into fabric.

The proposed solution involves the development of a photovoltaic (PV) fiber that can be woven into a power fabric and integrated on to first responder garments, shelters, and related equipment to provide reliable power for charging batteries or power electronics.

This project will develop commercially viable, textile-integrated, energy-harvesting photovoltaic devices that can be fielded for direct DHS application. In addition, the platform technology has a wide range of applications for force protection across the United States government.



ACCOMPLISHMENTS TO DATE

- Phase 1. Proof of Concept / Small Scale (100 cm²) Demonstration of OPV fabric (Completed)
- Phase 2. Scale up of Production and Testing of OPV Energy Harvesting Fabric Swatches and demonstration of integration onto fire fighter garment. (on-going)

UPCOMING MILESTONES

- Phase 3. Production of Limited Quantity of OPV Fabric Using Standard Industrial Equipment/Processes
- Phase 4. Manufacture of Garments from OPV Energy Harvesting Fabric for Evaluation by Responders

PARTNERS AND PERFORMERS

- Protect The Force Inc – Jacksboro, TN Boston MA
- University of Massachusetts-Lowell, MA
- Textech Inc, Portland, ME
- Saunders Electronics, Portland, ME

KEY CUSTOMERS

- U.S. Customs and Border Protection
- Wildland firefighters