



NEXT GENERATION SOLAR CELLS FOR LIGHTWEIGHT, CONFORMAL AND RENEWABLE POWER | WarSTAR

OVERVIEW:

New dye sensitized nanocomposite technology has been used to develop lightweight, conformal and textile integratable photovoltaics (PVs) to help address Warfighter power needs.

DESCRIPTION:

The core technology is based on very thin (<3 sheets of paper thick) nanocomposite PV coatings that are applied to flexible plastic films in a cost effective roll-to-roll manufacturing process.

WARFIGHTER PAYOFF:

Weight reduction, increased mobility and distance from TOC, extend mission times, minimize logistics support requirements, and save lives as an emergency back up power generating device. The devices are also stealthy, user friendly, require minimal electrical connections and cost effective.

APPLICATIONS:

- **Battery Rechargers:** Portable (AAs, BB2590, etc.) and Stationary - kW power from larger surface areas structures (shelters, vehicles - manned and unmanned)
- **Hybrid Power:** Complement to generators
- **Sensor Arrays:** Minimize power resupply for remote, distributed sensor arrays
- **Modular Power:** Provide pockets of power, minimize wires/connects

NEW - UNIQUE CONCEPTS WITH THIS TECHNOLOGY:

- **Extremely High Power Densities:** > 40 W/lb
- **Photovoltaic Fibers:** First laboratory demo of a PV fiber. Work will continue to weave into PV textiles.
- **Camo Patterned:** Only known PV technology where actual PV device can be camo-patterned for minimal visible signature

COLLABORATION/TRANSITION:

- Technology Transition Initiative (TTI) with USSOCOM to develop PV AA battery rechargers, shelters and remote sensors
- Defense Technology Objective (DTO) with Air Force
- DARPA - Organic Solar Cell Program

POINT OF CONTACT:

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UNCLASSIFIED



PLASTIC PV FILM



CAMO-PATTERNED PV



PV FIBER