

## **Lightweight, Wearable Energy Storage Devices for Fire Fighters and First Responders**

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Flexible and wearable electronics have become popular in this day and age and a lot of applications have been proposed for these. Wearable energy storage systems have applications that could provide power to a wide range of applications such as for medical bio-monitoring devices, military equipment, safety and construction gear like illuminated vests and for other devices used by first responders and low wage workers.

This proposal focuses on developing and providing energy storage devices (supercapacitors) made of nanomaterials (CNT and its composites) that are suitable and simple to incorporate into fabrics. Specifically in the fabrication of supercapacitors, CNTs have been found to be very effective and efficient. They have a relatively large surface area, high electrical conductivity, high mesoporosity and high electrolyte accessibility which make them excellent materials to be used especially in the fabrication of supercapacitors. CNTs can also be drawn into fibers which makes it easier to incorporate into materials and to be used structurally.



# University of Cincinnati 18th Annual Pilot Research Project Symposium October 5-6, 2017



## Pilot Research Training Program (PRP) Overview

Welcome to the University of Cincinnati Education and Research Center's (ERC) 18th Annual Pilot Research Project (PRP) Symposium on October 5-6, 2017, held in the Medical Sciences Building Kresge Auditorium. The purpose of the PRP is to increase the research capacity of research trainees and young investigators in occupational health and safety and to encourage those in related disciplines to pursue occupational health and safety research.

Under the administrative direction of Dr. Amit Bhattacharya, research proposals are solicited and peer-reviewed annually by qualifying faculty and graduate students from the University of Cincinnati and the following PRP partnering institutions – Air Force Institute of Technology, Bowling Green State University, University of Toledo – Health Science Campus, Central State University, Purdue University, University of Kentucky, Western Kentucky University, Eastern Kentucky University, Murray State University, Ohio University and Kentucky State University.

At this symposium, the 2016-17 awardees will be presenting the results of their research and the 2017-18 awardees will make poster presentations of their proposed work. The keynote speaker on Thursday, October 5, 2017 is Dr. Carri Casteel from the University of Iowa College of Public Health, presenting on "Public Health Approach to Workplace Violence Prevention in Small Businesses."

The University of Cincinnati's Education and Research Center is one of 18 such centers funded by the National Institute for Occupational Safety and Health (NIOSH) nationally. Dr. Tiina Reponen serves as the director of the ERC, which is based in the University's Department of Environmental Health within the College of Medicine. The purpose of the ERC is to train professionals in the didactic and research skills necessary to lead the occupational safety and health disciplines. Results of research are translated into action through an outreach program and shared with professionals and practitioners in the region via continuing education.

Since 1999, the PRP program has allocated over \$1.3 million to support 230 pilot research projects. These projects have served as a catalyst in bringing over \$39 million in additional research support to the region from sources independent of the PRP program, such as, the National Institute for Occupational Safety and Health (NIOSH), National Institutes of Health (NIH), United States Department of Agriculture (USDA), National Science Foundation (NSF), and the Centers for Disease Control and Prevention (CDC). Additionally, the PRP has brought 51 new investigators from other fields of expertise to the area of occupational safety and health research.

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