



**Western University**  
**Department of Physics and Astronomy**

## **PHYSICS & ASTRONOMY COLLOQUIUM**

**Date: FRIDAY, 3<sup>rd</sup> August 2018**

**Time: 11:00 a.m.**

**Location: Physics & Astronomy Seminar Room 100**

### **Dr. Jayan Thomas**

Department of Materials Science & Engineering  
University of Central Florida

### ***“Fibers and ribbons for powering wearable devices”***

#### **ABSTRACT**

Currently, wearable electronic devices attract considerable attention and represent a paradigm change in consumer electronics, on-body sensing, artificial muscles and skins, and wearable communication and entertainment devices. Integration of these wearable devices to textiles, eyeglasses, and watches, or implanted directly into the body, have the advantage of real-time monitoring and eliminates the requirement for distinct carriage. Since all these electronic devices require energy to operate, wearable energy devices are an integral part of wearable devices. This presentation will focus on our recent initiative in the direction of wearable energy fabrics development. This is accomplished by fabricating filaments in the form of copper ribbons that are thin, flexible and lightweight. These filaments were successfully weaved into a piece of fabric. The ribbons have a solar cell on one side and energy-storing layers on the other. When this smart energy fabric is exposed to sunlight, energy is harvested by the solar cell and directly stored in itself without the need for a separate battery. This breakthrough would essentially turn jackets into wearable, solar-powered batteries that do not need to be plugged-in. It could one day revolutionize wearable technology, helping soldiers who carry heavy loads of batteries to texting-addicted teens who could charge their smartphone by simply slipping it into their pocket. There is a host of other potential uses, including electric cars that could generate and store energy whenever they're in the sun.

***All are welcome to attend!***