



Graduate Seminar (EEL 6936)
Department of Electrical Engineering
http://ee.eng.usf.edu/Grad_Seminar

Dr. Arash Takshi

University of South Florida (USF)
Electrical Engineering

Friday, February 28, 2014, 3:30-4:30 p.m.
Engineering Building B (ENB) Room 118

Protein Based Solar Cells and Soft Supercapacitors

Abstract

Soft electronics is a new technology which employs bio-materials, organic chemicals, polymers, and plastics to fabricate electronic devices. Mechanical flexibility, special chemical properties, and simple fabrication processes are the main advantages of using these materials. Printable RFID tags, wearable electronics and organic solar cells are a few examples of new products using this technology.

In this talk, two new soft devices will be introduced: Protein Based Solar Cells and Soft Supercapacitors. In the former one, proteins from photosynthetic cells are employed to generate electricity. Taking advantage of the evolution in the photosynthesis process, bio solar cells will be able to work at very low light intensity and also will be cheap enough for widespread use. A supercapacitor is an energy storage device with high power density and a large cycle lifetime compare to a battery. A soft supercapacitor made of thin films of conducting polymers can be used in a package of a chip to power the circuit, or it may be integrated with an organic solar cell to store excess energy generated during peak hours of sunlight.

Biography



Arash Takshi graduated in electronics from Amir Kabir University of Technology in Iran in 1993. Three years later he received his M.Sc. in analog electronics from Sharif University of Technology in Tehran. He worked in industry as an electronic design engineer for seven years before he started his Ph.D. at University of British Columbia (UBC), Vancouver, Canada. In 2007 he received his Ph.D. in the field of organic electronics. After that Dr. Takshi worked on protein-based solar cell devices as a research assistant at UBC for two years. From December 2009 to August 2010 he worked with a research team at University of Maryland on developing energy harvesting systems for wireless sensors. In August 2010 Dr. Takshi joined the Electrical Engineering department at USF as an Assistant Professor where he is working on organic and bio electronic devices.