



# Electrical & Computer Engineering

## FLORIDA INTERNATIONAL UNIVERSITY

### Invited Speaker Series



**Dr. Deidra Hodges**

University of Texas El Paso - Department of Electrical and Computer Engineering

### ***Perovskite Photovoltaics and $\gamma$ -ray Radiation Detectors Research Highlights***

Friday, November 17 | 10 am - 12 pm

Florida International University | Engineering Center 3930

#### **Abstract**

Renewable energies are one of the most important components of the global new energy strategy. Utilizing the power of the sun is one of the most viable ways to solve the foreseeable world's energy crisis. With increasing attention toward carbon-neutral energy production, solar electricity, or photovoltaic (PV) technology, is the object of steadily growing interest. The International Energy Agency's technology roadmap estimates that by 2050, PV will provide ~ 11% of all global electricity production and avoid 2.3 gigatonnes of CO<sub>2</sub> emissions per year. A new solar cell material has evolved with transformative potential with laboratory efficiencies of 19.7%. Perovskite absorber materials are very inexpensive to synthesize and simple to manufacture, making them an extremely commercially viable option. Solar cell efficiencies of devices using these materials have increased from 3.8% in 2009 to 20.1% in 2015, making this the fastest-advancing solar cell technology to date. These devices are also known for their high photon absorptivity, ideal direct band gaps with superior carrier charge transports, and cost-effective modes of fabrication scalability.

#### **Bio**

Dr. Hodges received B.S. degrees in both Physics and Electrical Engineering in a Dual Degree program between Dillard University and Columbia University. Dr. Hodges also received a M.S. in E.E. degree from Columbia University. She joined IBM Federal Systems Division in Clear Lake, Texas, working on NASA's Space Shuttle program in Avionics Flight Software. Hodges later joined Martin Marietta Manned Space Systems doing independent research and development in support of NASA's Unmanned Shuttle C proposal. Dr. Hodges received the Ph.D. in E.E. from the University of South Florida. She joined the faculty at Southern Polytechnic State University in Marietta, GA and initiated her research program in CZTS photovoltaics, with funding support from NSF. She later joined the faculty at the University of Texas at El Paso and continued developing her research program in photovoltaics.