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(A) PROFESSIONAL PREPARATION

Bachelor of Science	VTU, India (ECE)	2005
Master of Science	Florida State University (EE)	2009
Doctor of Philosophy	Florida State University (EE)	2013

(B) APOINTMENTS

Tennessee Technological University

Assistant Professor	2013 August - Present

Florida State University

Adjunct Professor	2011 January - July 2013
Project Leader Boeing Project	2010 July - December 2010
Graduate Research Assistant	2008 May - July 2013
Graduate Teaching Assistant	2007 July - April 2011

Visvesvaraya Technological University

Lecturer of Electronics and Communication Engineering	2006 Jan – December 2006

Research Area 1: Modeling of High-Efficiency Solar Cells

Out of average solar irradiance of 1kW/m², 445 Watts (W) come from visible range; 527 Watts come from infrared (IR) and 28 Watts from ultraviolet (UV) range of the solar radiation spectrum with visible range having the maximum intensity. A low bandgap semiconductor generates larger current due to photon absorption over broader spectral region but do not produce high open circuit voltage because it is limited by the dark current of the low bandgap material. In our SOLBAT-TTU Energy Research Laboratory we are to finding solutions to the cost-effectiveness of solar cells by 1) increasing the efficiency of solar cells through effective spectral splitting by different bandgap semiconductor subcell layers, 2) implementing III-V direct bandgap optically sensitive and high carrier mobility semiconductors, 3) forming better matching (lattice, optical and electrical) between subcell layers, 4) optimization of quantum efficiency (QE) vs. wavelength of semiconductor subcell layers for maximum efficiency, 5) electrical modeling by adjusting series, parallel resistance & cell thinning and 6) reducing the fabrication cost of the epitaxial layers.

Research Area 2: High Energy-Density & High Power-Density Li-ion/Li-air and Al-ion/Al-air Battery Research

In SOLBAT-TTU Energy Research Laboratory PI, his graduate and undergraduate students are performing Lithium and Aluminum ion/air battery research which will have significant impacts by i) developing high-energy density electrode materials for batteries, ii) finding novel electrode materials for high power-density, cost-effective and safe batteries, iii) developing protection circuitry to protect over-charging or heating of batteries and better battery management algorithms, iv) developing methods to prolong battery cycle life, v) discovering proper electrodes that will not react with electrolyte and form dendrites leading to short-circuit, vi) finding mechanisms to avoid blockage of porous carbon cathode and incomplete discharge, vii) developing better understanding of pore size and pore size distribution on cathodes, viii) finding parity between charge over potential and discharge over potential, and ix) avoiding significant drop in cell capacity with increasing discharge rate.