

ASHISH SHARMA

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OBJECTIVE

Seeking a fulltime position as an engineer in a semiconductor industry to make a significant contribution utilizing my skills and technical abilities.

EDUCATION

PhD in Engineering, Micro-nano Scale Systems	Spring 2016
Louisiana Tech University, Ruston, Louisiana, USA	GPA: 4.0/4.0
Master of Science, Microsystems Engineering	Spring 2016
Louisiana Tech University, Ruston, Louisiana, USA	GPA: 4.0/4.0
Master of Science, Electrical Engineering	May 2015
Louisiana Tech University, Ruston, Louisiana, USA	GPA: 4.0/4.0
Erasmus Mundus E-link UGT, Computing Informatics and Media	Aug. 2010
University of Bradford, Bradford, UK	GPA: 4.0/4.0
Bachelors of Engineering, Electronics and Communication	Nov. 2008
Tribhuvan University, Kathmandu, Nepal	GPA: 4.0/4.0

TECHNICAL SKILLS

Micro-nano Fabrication and Modeling

- Expertise in the product design, modeling, simulation, processing, fabrication, optical and electrical characterization and testing of optoelectronics, semiconductive (PN Diode, MOSFET) and MEMS devices.
- Hands-on experience inside Class 100 clean room for microfabrication processes: photolithography, thin-film deposition using sputtering, thermal evaporator and layer-by-layer, CVD, spin coating, wet etching and RIE.
- Hands-on experience in metrology lab for device characterization and testing using AFM, SEM, optical microscope, surface profilometer, Keithley test station, Filmetrics, Van der pauw, photoluminescence, solar spectrum analyzer, oscilloscope, power meters, pico-ammeter, monochromator, solar simulator, electron beam detection etc.

Six Sigma Green Belt: Statistical analysis, quality control, FMEA, lean manufacturing, MSA, process and product development, process capability analysis, control charts, KAPA etc.

Computer Skills: Device modeling and simulation using TCAD, Mathematica, MATLAB, COMSOL; programming: C, C++, Lab View; word processors: Microsoft office and LaTeX.

Languages: Excellent communication, writing and presentation skills in English, Nepali, and Hindi.

PROJECTS

- Alpha/Beta voltaic with semiconductive conjugated polymer
 - Designed and developed long duration betavoltaic devices, significantly reduced the loss mechanism and enhanced performance by 39 times, optimized the scintillator layer and increased efficiency by upto 50%.
 - Implemented project-planning strategy to define goals, tracked progress weekly and ensured all deadlines met.
- Analytical modeling of surface plasmon enhanced silicon PN junction solar cell
 - Conceptualized and developed mathematical model for thin film PN junction solar cell.
 - Investigated the role of front and back layer thicknesses on device performance.
 - Investigated the different boundary conditions and their role on device performance.
 - Investigated the integration of metal nanoparticles using metal-dielectric composite (MDC) to achieve the surface plasmon enhancement on device performance by upto 30%.
- Experimental optimization and simulation of polymer solar cell and photodetector
 - Experimentally investigated the role of active layer thickness and enhanced efficiency by upto 650%.
 - Simulated the polymer device with P3HT:PCBM active layer to investigate the role of thickness on performance.
- Experimental investigation of bilayer graphene transparent electrode in the application of photovoltaic cell
 - Successfully replaced the indium tin oxide (ITO) transparent electrode with graphene, includes graphene transfer on quartz from copper substrate, doping graphene with gold nanoparticles to enhance optical and electrical characteristics.
- Statistical analysis, Gage R&R and capability analysis of Wendy's Fries production process
 - Statistically analyzed the Fries production process of Wendy's using six-sigma quality control strategy.
 - Capability analysis concluded that the process mean was off-centered however, the Gauge R&R showed inadequacy of measuring instrument.
- TCAD simulation of delta-doped MOSFET with post-low-energy implanting selective epitaxy
 - Simulated delta-doped MOSFET device, studied the impurities concentration profiles using 1D, 2D and 3D plots, investigated the metallurgical junction and obtained channel length.

- Studied and implemented various MOSFET fabrication processes: photolithography, fully-recessed LOCOS, oxidation, diffusion, ion-implantation, metallization etc.
- Design, fabrication and testing of “*Micro channel heat sink with liquid coolant*”
 - Designed, modeled, simulated and fabricated micro channel heat sink using photolithography, wet etching process of silicon wafer, silicon-glass anodic bonding, and tested successfully using electronic chip and water as coolant.

PROFESSIONAL EXPERIENCE

- **Graduate Research Assistant**, Louisiana Tech University June 2012 – present
 - Designing, modeling, fabrication and testing devices in field of semiconductor, photovoltaic, micro-fabrication and MEMS, maintaining lab inventory and equipment.
 - Assisting teaching classes, lab demonstration and grading courses for graduate and undergraduate students.
 - Mentored and trained undergraduate and graduate intern students.
- **President (Vice-President and General Secretary)** COES Grad Student Council, LaTech May 2013 – present
 - Coordination between student community and university administration.
 - Organized 3rd Graduate student conference 2013, Louisiana Tech University.
- **Tutor**, S2S Tutor April 2014 – present
 - Tutored more than 10 college level students.
 - Implemented effective teaching techniques to help students to achieve set goals.
- **Lecturer**, Kantipur Engineering College, Tribhuvan University, Nepal April 2009 – May 2012
 - Instructed classes, conducted lab and supervised projects for engineering students.
 - Designed, managed and conducted research projects and trainings as a member of RTCD.
 - Enhanced skills of teaching, coordination, mass control, leadership and management.
 - Worked as a member of Admission Committee 2011.
- **Visiting Faculty**, Kathford Intl. College of Eng. and Mgmt., Nepal Jan 2011 – May 2012
 - Instructed classes, conducted lab and supervised projects for engineering students.
 - Amplified teaching, coordination and management skills.
- **Founding President**, Youth Uniting for Development, NGO, Kathmandu, Nepal Sept 2011 – present
 - Enhanced leadership, management, decisiveness skills, and practiced social responsibilities.

HONORS AND AWARDS

- “**Outstanding Graduate Student Award**”, Louisiana Tech University, Ruston LA, USA 2014
- “**Best People’s Choice Award, 2014 Top Dawg Idea Pitch**”, Louisiana Tech University, Ruston LA, USA 2014
- “**Best Graduate Poster Presentation**”, 88th Annual Meeting of Louisiana Academy of Sciences, USA 2014
- “**Graduate Research Assistantship**”, Louisiana Tech University, Ruston, LA, USA 2012
- “**Best Project Performer 2009**”, Senior-Design, Kantipur Engineering College, Nepal 2009
- “**Erasmus Mundus Elink Scholarship**”, European Union, University of Bradford, UK 2009
- “**Best Idea Award**”, National Robotics Competition 2007, Nepal 2007
- “**Full scholarship, Bachelors of Engineering**”, Tribhuvan University, Nepal 2004
- “**Best Student Award**”, Siddhanath Science Campus, Nepal 2003
- “**Full scholarship, Intermediate in Science**”, Tribhuvan University, Nepal 2002

TECHNICAL PUBLICATIONS

- “Betavoltaic Cells Using P3HT Semiconductive Conjugated Polymer”, *IEEE Trans. Electron Devices*, vol. 62, no. 7, pp. 2320–2326, Jul. 2015.
- “Analytical Model of Thin-Film Silicon Solar Cell”, *ASME 2015 International Mechanical Engineering Congress and Exposition*, 2015.
- “Novel use of semiconductive conjugated polymer with optimized scintillator for betavoltaic applications”, *ASME 2015 International Mechanical Engineering Congress and Exposition*, 2015.
- “Experimental optimization of polymer solar cell with P3HT:PCBM active layer, *Louisiana Scientist*”, 2014, vol. 5 (1), p. 28.
- “Modeling of the polymer solar cell with a P3HT:PCBM active layer”, *Phys. Scr.*, vol. 2014, no. T162, p. 014035, Sep. 2014.
- “Experimental investigation of bilayer graphene transparent electrode in the application of photovoltaic cell”, *Louisiana Scientist*, 2014, vol. 5 (1), pp. 29–30.
- “P3HT:PCBM solar cells and their computational modeling in COMSOL”, *2014 MRS Spring Meeting and Exhibit*, 2014.

REFERENCES

Provided upon request