Abdullah S. Abbas

Nanotechnology Engineering Grad 2017
University of Waterloo
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Abu Arish, Jazan, Saudi Arabia

SKILLS

Electronics: RC Filters, Oscillators, Amplifiers (OpAmp/transistors), Power Supplies for High Voltage Systems.

PCB Design: EagleCAD and KiCAD

Rapid Prototyping: CNC Machining, Soldering Through-hole and SMD, AutoCAD, Extrusion-based 3D Printing.

Simulation & Programming: PSpice, OrCAD Capture, COMSOL Multiphysics, Matlab, Python, Quantum Espresso (DFT engine), Scaps (solar simulator tool)

Optical Systems: Laser spectroscopy, Spectrophotometer, Spectrofluorometer, FTIR Spectrometer, Raman Spectrometer, Ellipsometry, Fiber Optics.

WORK EXPERIENCE

University of California, Berkeley, Prof. Paul Alivisatos / January – August 2016
Synthesized quantum dots and study their photo-physics dynamics using laser spectroscopy and spectrometers.

University of Toronto, Prof. Ted Sargent / August 2014 – April 2015
Designed solar cell structure that achieved a record efficiency of 9.99% early 2016. My work resulted in three publications.

King Abdullah University of Science and Technology, Prof. Omar Mohammed / January – April 2014
Researched an optimal Donor-Acceptor organic molecules for LEDs and used Ultrafast Femtosecond Laser spectroscopy and spectrometers techniques to study their efficiency and stability.

University of Waterloo, Prof. Vivek Maheshwari / April – December 2013
Built single electron transistor using Gold Nanoparticles with Nanowires of Zinc Oxide (ZnO) as the gate electrode. The transistor is modulated when ZnO absorbs UV light. Results was published in Advanced Materials.

EDUCATION

Candidate for Bachelor of Applied Science: Honours Nanotechnology Engineering,
Co-operative Program, University of Waterloo / September 2012 – April 2017

Relevant Projects and Courses:

DropLab (Capstone Project) / September 2016 – July 2017
Worked on a device for digitally manipulating the motion of fluid drops. The device required an adjustable AC Signal Amplifier operating at very high voltages. The various circuit designs were evaluated using simulation tools, and machined using an in-house CNC. I also worked on SPI communication to interface with a digital controller using Arduino. This project also involved material science principles in order to create hydrophobic and dielectric coatings whose wetting characteristics were a function of the applied voltage.

Water Treatment: Researched novel techniques to remove metal ions contaminants from water using cellulose nanocrystal functionalized with supermagnatic iron oxide nanoparticles and glutathione as a chelating agent.

Solar Cell Modelling: Built a matlab code to predict Quantum Dots (QDs) Solar Cell efficiency based on QDs energy bandgap.

Photonics Materials and Devices NE 445
Nanoelectronics NE 471
Nanofabrication NE 353
Micro and Nano Scale Computer-aided Design (CAD)
Electronic Circuit NE 344
Electronic Devices NE 242