

Monas Shahzad, Ph.D.

12010 Pasteur Dr. Orlando, FL 32826

Email: monas.shahzad@ucf.edu

Cell # 407-698-8630

<https://www.linkedin.com/in/monas-shahzad-3329251b/>

Summary

Research scientist working in the field of optics and optoelectronics devices having 8+ years of experience of device fabrication and processing of semiconductor. I am a problem solver, tenacious, results-oriented and having ability to work independently and as a strong team player in fast paced and challenging professional environment.

Professional Skills

- **Microfabrication:** Trained in Photolithography, Wet and dry etching, PECVD, E-beam & Thermal evaporation.
- **Metrology:** Skilled in characterization of semiconductor devices using SEM, FIB, FTIR, Ellipsometer, Raman, UV-VIS spectrophotometer, Packaging of semiconductor laser chips, die and wire bonding of chips on substrate, solder processes, LIV and beam profiling spectral measurements.
- **Data Analysis:** Strong computer skills using MATLAB, Python, Origin lab, and basics competency in COMSOL Multiphysics and LabView.

Professional Experience

NanoScience and Technology Center

Research Scientist, Univ. of Central Florida.

(Aug. 2019 – Present)

- Carried out a systematic experimental research on catastrophic optical damage (COD) for high power quantum cascade lasers (QCLs).
- Developed a QCL COD model describing instantaneous laser damage at high optical power levels.
- Delivered the results to fully design changes to laser design and fabrication by validating predictions of the model to experimental data required to increase damage threshold and for the development of >10W CW QCL to be used in critical defense applications.

Department of Physics

Graduate Research Assistant, Univ. of Central Florida.

(Aug. 2007 – Dec. 2012)

- Studied novel materials as host for Infrared (IR) Surface Plasmon Resonance (SPR) such as heavily doped silicon, semimetals (Sb, Bi) and conducting polymers (polyaniline).
- Calculated the complex permittivity spectra (IR and Vis) of heavily doped silicon and thermally evaporated thin films of semimetals on plasma etched and focused ion beam (FIB) grating of silicon to calculate IR plasmonics parameters.
- Demonstrated seminal results of Mid IR Surface Plasmons on heavily doped silicon as a host for bio-sensing.
- Devised chip scale spectral sensor based on convergence of silicon photonics and IR surface plasmons.

Department of Physics

Assistant Professor Forman Christian College, Lahore Pakistan

(Jan.2013- Aug 2019)

- Fabricated hybrid materials for applications of plasmonics in solar cells.
- Demonstrated application of nano-plasmonics using graphene for surface enhanced Raman spectroscopy (SERS) for the detection of E-coli.
- Established Optics lab and taught courses of Optics and Plasmonics at graduate level.
- Supervised research thesis of several students for M.S. degree in Physics.

Education

Ph.D. (Physics)	Univ. of Central Florida	Dec. 2012
M.S. (Physics)	Univ. of Central Florida	Aug. 2010
M. Phil.(Applied Physics)	Univ. of Engineering & Technology, Lahore Pakistan.	Aug. 2007

Selected Publications

1. **Monas Shahzad**, Gautum Medhi, Robert E. Peale, Walter R. Buchwald, Justin W. Cleary, Richard Soref, and Glenn D. Boreman “Infrared surface plasmons on heavily doped silicon”, Journal of Applied Physics, 110, 123105-6 (2011).
2. Justin W. Cleary, Gautam Medhi, **Monas Shahzad**, Robert E. Peale, Glenn D. Boreman, Walter R. Buchwald, “Infrared surface polaritons on antimony”, Optics Express 20, 2693-2705 (2012).
3. Farnood Rezaie, Christian W. Smith, Nima Nader, Janardan Nath, **Monas Shahzad**, Justin Cleary, Ivan Avrutsky, Robert E. Peale, “Infrared surface exciton polaritons on bismuth”, Journal of Nano-photonics, Vol. **9**, 93792-12 (2015).
4. Anil Pervez, Khalid Javed, **Monas Shahzad**, “Fabrication and comparison of Dye-sensitized solar cells using TiO₂ and ZnO as photo electrode”, Vol. 182, Optik (2018).
5. Dagan Hathaway, **Monas Shahzad**, Tamil S Sakthivel, Mathew Suttinger, Arkadiy Lyakh, “Output facet heating mechanism for uncoated high power longwave infrared quantum cascade lasers”, AIP Advances 10, 085104 (2020).

Awards & Honors

- USAID faculty development award for M.Phil. in Physics (2005-2007)
- Fulbright Fellowship for doctorate in Physics (2007-2012)

Research Profile Links

- <https://scholar.google.com.pk/citations?user=9-XLgAUAAAAJ&hl=en>
- <https://publons.com/researcher/3146726/monas-shahzad/>
- https://www.researchgate.net/profile/Monas_Shahzad

References

1. Dr. Robert E. Peale

Professor
Department of Physics
University of Central Florida,
Orlando, FL, USA
Phone: +1- 407-823-5208
Email: robert.peale@ucf.edu

2. Dr. Arkadiy Lyakh

Associate Professor
Nano Science and Technology Center
Department of Physics and CREOL
University of Central Florida
Orlando FL USA
Phone:+1-407-823-0699
Email: arkadiy.lyakh@ucf.edu