Nadir Ali

G.P. Hostel, Indian Institute of Technology Roorkee
Roorkee, India - 247667
nali@ph.iitr.ac.in
+919582290819

Education

2016 – **Ph.D. Physics, Indian Institute of Technology Roorkee, India.**
Thesis title: *Nonvolatile Silicon Photonic Switches Enabled by Waveguide Embedded Phase Change Material*
Supervisor: Prof. Rajesh Kumar

2013 – 2015 **M.Sc. Physics, Jamia Millia Islamia (Central University), New Delhi, India**

2010 – 2013 **B.Sc. (Hons) Physics, Jamia Millia Islamia (Central University), New Delhi, India**

Research Interest

- Active silicon photonics, phase change materials, nonvolatile photonic switching devices.
- A strong background in semiconductor device modeling and simulations, computational electromagnetic, photonics, opto-electronics, and thermo-optics.
- Modeling and simulations, and custom algorithm development for novel device design and scientific analysis.
- Designing and simulating photonic components using standard electromagnetic and thermal solvers.

Research Publications

Journal Articles

1. **Ali, Nadir**, Kumar, R., & et al. (2021). Electrically controlled 1 x 2 tunable switch using phase change material embedded silicon microring (Under review).
2. **Ali, Nadir** & Kumar, R. (2019b). Mid-infrared non-volatile silicon photonic switches using $Ge_2Sb_2Te_5$ embedded in SOI waveguide. *Nanotechnology*, *31*(11), 115207. doi:10.1088/1361-6528/ab5a04
3. **Ali, Nadir** & Kumar, R. (2018b). Design of a novel nanoscale high-performance phase-change silicon photonic switch. *Photonics and Nanostructures - Fundamentals and Applications*, *32*, 81–85. doi:10.1016/j.photonics.2018.10.007

Selected Conference Proceedings

1. **Ali, Nadir** & Kumar, R. (2019a). Design and simulations of photonic switch using hybrid $Ge_2Sb_2Te_5$-silicon waveguides in Mid-IR region. In *17th international conference on optical communications and networks (ICOCN-2018)* (Vol. 11048, p. 1104836). International Society for Optics and Photonics. doi:10.1117/12.2522258

2 **Ali, Nadir** & Kumar, R. (2019c). Tunable optical filter enabled by phase change material embedded in SOI microring resonator. In *JSAP-OSA joint symposia 2019* (). Optical Society of America. http://www.osapublishing.org/abstract.cfm?URI=JSAP-2019-20a_E215_4

3 Kumar, R., **Ali, Nadir**, & Singh, S. (2019). High performance and CMOS compatible photonic switches based on phase change materials. In *Optoelectronic devices and integration viii* (Vol. 11184, p. 111840C). International Society for Optics and Photonics. doi:10.1117/12.2538866

4 **Ali, Nadir** & Kumar, R. (2018a). Chip-scale mid infra-red photonic switch based on $Ge_2Sb_2Te_5$ incorporated in SOI waveguide. In *Photonics - 2018 international conference on fiber optics and photonics* (SB1–C1). Photonics-2018.

5 **Ali, Nadir** & Kumar, R. (2018c). Mid infra-red directional coupler optical switch based on phase change material embedded in partially etched SOI waveguide. In *Frontiers in optics / laser science* (JTu2A.102). Optical Society of America. doi:10.1364/FIO.2018.JTu2A.102

Skills

Languages	Strong reading, writing and speaking competencies for English and Hindi.
Softwares	CST Microwave Studio, COMSOL, Luceda IPKISS, MATLAB, LaTeX, FORTRAN.
Experimental	Handling standard electronic-photonic characterization equipment (OSA, swept wavelength lasers, sampling oscilloscopes, lightwave component analyzers, chip measurement setup, etc.).
Misc.	Academic research, writing, teaching.

Miscellaneous Experience

Awards and Achievements

2019 **Travel Grant** for conference presentation at JSAP-OSA joint symposia 2019, Hokkaido University, Hokkaido, Japan. Awarded by Dean of Student Welfare, Indian Institute of Technology Roorkee.

2018 **Best Paper Award** for "Design and simulations of photonic switch using hybrid $Ge_2Sb_2Te_5$-silicon waveguides in Mid-IR region" in ICOCN-2018 Conference, Zhuhai, China.

2016 **Fellowship Award** by Graduate Aptitude Test in Engineering (GATE), Ministry of Human Resource and Development India.

Certification

2018 **Gian Course** (High Speed Optical Transmitters for Optical Interconnects). Awarded by Ministry of Human Resource Development India and IIT Roorkee.

2017 **INUP Familiarization Workshop** on "Nanofabrication Technologies" at IIT Roorkee, Uttarakhand. Awarded by Center for Nano Science and Engineering IISC, Bengaluru, India.

References