Announcement of the 2022 EDS PhD Student Fellowship Winners

The Electron Devices Society PhD Student Fellowship Program was designed to promote, recognize, and support PhD level study and research within the Electron Devices Society's field of interest.

EDS proudly announces three EDS PhD Student Fellowship winners for 2022: **Asir Intisar Khan** – Stanford University, United States; **Nilesh Pandey**, Indian Institute of Technology Kanpur, India; **Shaochuan Chen**, RWTH Aachen University, Germany. Brief biographies of the recipients appear below. Detailed articles about each PhD Student Fellowship winner and their work will appear in forthcoming issues of the EDS Newsletter.

Asir Intisar Khan

Asir Intisar Khan is a Ph.D. candidate in the Electrical Engineering department at Stanford University, supervised by Professor Eric Pop. He received his Master of Science (M.S.) in Electrical Engineering from the same department at Stanford. Prior to joining Stanford in 2018, he received another M.S. (2018) and a Bachelor of Science (2016) in Electrical and Electronic Engineering from Bangladesh University of Engineering and Technology. His research efforts and vision encompass exploring novel materials and their functionalities to enable energy-efficient memory, computing devices and interconnects for 3D heterogeneous integration. His research work has enabled the lowest-to-date switching current density in phase-change memory technology and has been featured in Forbes Magazine and IEEE Spectrum. He also received the best student paper award for technology in 2022 IEEE Symposium on VLSI Technology and Circuits. He has held Research Intern positions at TSMC and IBM TJ Watson Research Center. Asir is a recipient of the Stanford Graduate Fellowship, Stanford Electrical Engineering Departmental Fellowship, and the 2022 IEEE EDS PhD Student Fellowship.

Nilesh Pandey

Nilesh Pandey's Ph.D. Nilesh Pandey completed his undergraduate from the National Institute of Technology, Kurukshetra (INDIA), in Electronics and Communication Engineering (2017). During his undergraduate studies, he developed a keen interest in semiconductor device modelling. Nilesh started to work in the semiconductor device modelling area in 2015. He published his first paper in IEEE T-ED during his undergraduate study. That paper formulated a new fundamental approach to solving the 2-D Poisson's equation using Green's function approach leading to more than ten publications in prestigious journals such as IEEE T-ED and IEEE EDL.

Shaochuan Chen

Shaochuan Chen (graduate student member of IEEE and IEEE EDS) received his bachelor's degree in Engineering at North China Electric Power University (NCEPU) in 2016. He is currently pursuing doctoral degree in Electrical Engineering and Information Technology with Electronic Materials Research Laboratory (EMRL) at RWTH Aachen University, Germany. His doctoral study is supervised by Prof. Dr. Rainer Waser and Dr. Ilia Valov (Forschungszentrum Jülich). His research aims at developing emerging non-volatile memories, including valence change memories (VCM) and electrochemical metallization memories (ECM) for data storage and neuromorphic computing applications. His work include the micro and nanoscale fabrication of two terminal memory devices, oxide semiconductors preparation by physical and chemical vapor deposition, and electrical characterization of memristive switching behavior. His recent research is focusing on the understanding of nanoscale charge (electron and ion) transport at electrode-solid electrolyte interface, formation of electron conducting channels in the oxide semiconductors, and materials and devices design for achieving high-performance memristive and neuromorphic functionalities. He is also involved in the supervision of master students to complete their master projects at RWTH Aachen University. The student projects include investigating active electrode impurity impact on the electrode ionization, cation migration and switching dynamic in tantalum oxide based electrochemical metallization memories, and studying metallic doping influence on the electrical properties and reliability of tantalum oxide and hafnium dioxide valence change memories. He has published 15 technical papers, including journal papers in Advanced Materials, Nature Electronics, Advanced Functional Materials, and Chemistry of Materials. Some of the work were selected as journal covers. During his graduate study, he obtained the international mobility fellowship from Soochow University to join the Electrical and Computer Engineering Department of University of California Santa Barbara, where he worked on the development of memristive devices based on two dimensional layered materials for artificial neural network applications.

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