

Dr. Partha Das

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Research Interests:

- GaN based Devices (HEMT)
- Resistive Memory Devices (RRAM)
- Rectenna for Infrared Energy Harvesting
- Modeling and simulation of semiconductor devices

Education:

Degree	Institution/Board	Year of Passing	Aggregate
Secondary	W. B. Board (W.B.B.S.E.)	2003	78.6 %
H.S (Science)	W. B. Board (W.B.C.H.S.E.)	2005	80.9 %
B.Tech (ECE)	Jalpaiguri Govt. Engg. College	2009	7.5
M.Tech (VLSI)	Institute of Radio-physics and Electronics, Calcutta University	2012	7.6
PhD (VLSI-Devices)	NIT Durgapur	2023	9

Work Experience:

Post held	Organization	Date of Joining	Date of Relieving
Assistant Prof. Grade-II	Sardar Vallabhbhai National Institute of Technology, Surat	03/10/2023	(Currently working)
Assistant Prof.	G H Raison College of Engineering and Management, Pune	07/01/2022	29/09/2023
Assistant Prof.	B A College of Engineering and Technology, Jamshedpur	16/07/2012	20/07/2016

Key Projects:

Project I: EPSRC Project no. EP/P510981/1, EPSRC, UK

-Experimental band alignment and electrical characterisation of different high-k dielectrics on GaN for high electron mobility applications.

- Physical characterisation of HfO_x and Hf/HfO_x layers for RRAM applications.

Project II: UGC-UKIERI III project number IND/CONT/G/17-18/18 -Experimental band alignment and electrical characterisation of ALD deposited Ternary oxides (Al-Ga-O and Ti-Al-O) on GaN for high electron mobility applications.

- Physical characterisation of sputtered Hf-Al-O layers for RRAM applications.

-Physical characterisation of sputtered Al₂O₃/HfO₂ bi-layers for RRAM applications.

Project III: GCRF project “Nanolaminate scandium-based stack for GaN power devices”

- Experimental band alignment and electrical characterisation of ALD deposited Ternary oxides (Sc-Al-O) on GaN for high electron mobility applications.

Outreach Activities:

Role	Location	Project	Duration
Honorary Research Student	Department of Electrical Engineering and Electronics (DEEE) & Stephenson Institute for Renewable Energy (SIRE), University of Liverpool,UK	EPSRC Project No. EP/P510981/1	6 months
Honorary Research Student	DEEE & SIRE, University of Liverpool,UK	UGC-UKIERI Project No. IND/CONT/G/17-18/18 (1 st Visit)	3 months
Honorary Research Student	DEEE & SIRE, University of Liverpool,UK	GCRF project	2 months
Honorary Research Student	DEEE & SIRE, University of Liverpool,UK	UGC-UKIERI Project No. IND/CONT/G/17-18/18 (2 nd Visit)	3 months

Achievements and certification:

I am chosen for my profile to be covered in the **Annual Report (2019-20) Success Story** on webpage in the **UK-India Education and Research Initiative (UKIERI III)**, British Council, UK, Available-(http://ukieri.org/public/uploads/impact_stories/1667298987627-Case15.pdf?_ga=2.263992335.2897030.1679635927-375582555.1679635927)

- MHRD Scholarship-M.TECH (GATE)
- MHRD Scholarship-PhD (GATE)
- CBSE NET DEC. 2015
- WB-SET DEC 2016

Simulation softwares and experimental tools:

- Cadence Virtuoso System Design, Circuit synthesis and Design in Xilinx ISE, H-Spice, TCAD Silvaco, VHDL etc.
- VASE, XPS, UPS, IEPS, XRD, SEM, TEM, RF and DC Sputtering, ALD, GaN-based device fabrication and characterization etc.

Training exposure:

- INUP familiarization workshop on- “Nanofabrication Technologies (7th)”, IIT Bombay, 22-24th May 2017.
- INUP hands-on training workshop on- “Fabrication & Characterization of GaN LED”, IIT Bombay, 10-15th September 2017.
- Workshop-cum-Training Programme on- “Advanced Materials Processing & Characterization”, CSIR-CMERI, 7-8th September 2017.
- INUP hands-on training workshop on- “Fabrication & Characterization of GaN MOS Capacitors”, IIT Bombay, 22-26th October 2018.
- Participated in the International Webinar On “Advanced Hybrid Materials for Sustainability”, organised by NIT Durgapur on 26-28th November, 2021.
- Obtained passing grade in IBM AI0101EN: AI for Everyone: Master the Basics, online Certification programme by edX (Verified Certificate Issued on July 2, 2022).
- INUP-“Idea to Innovation” lecture series on online TCAD–Circuit Simulation Workshop, dually organized by IIT Bombay and Synopsys during 1-5th August, 2022.
- UGC approved Professional Development Programme on ‘Implementation of NEP-2020 for University and College Teachers’ held from 17-25th October, 2022 and obtained 'A' Grade.
- 5-day Online FDP on “Advanced Material Characterisation Techniques” organized by department of Metallurgical Engineering, School of Engineering, OPJU Raigar, from 7-11th November 2022.
- Two Weeks Online National Level Faculty Development Program on “Deep Learning” during the period of 9-20th Jan 2023, organized by Department of Information Technology of Army Institute of Technology in association with IEEE and CSI Branch.

Key publications:

Journals:

- S. Biswas, A. D. Paul, **P. Das**, P. Tiwary, H. J. Edwards, V. R. Dhanak, I. Z. Mitrovic and R. Mahapatra, “Impact of AlO_y Interfacial Layer on Resistive Switching Performance of Flexible HfO_x/AlO_y ReRAMs”, *IEEE Transactions on Electron Devices*, v. 68, 2021, pp. 3787-3793, IF 2.917
- A. D. Paul, S. Biswas, **P. Das**, H. J. Edwards, A. Dalal, S. Maji, V. R. Dhanak, A. Mondal and R. Mahapatra “Improved resistive switching characteristics of Ag/Al:HfO_x/ITO/PET ReRAM for flexible electronics application” *Semiconductor Science and Technology*, v. 36, 2021, pp. 065006 (8pp), IF 2.508
- S. Maji, A. D. Paul, **P. Das**, S. Chatterjee, P. Chatterjee, V. R. Dhanak, A. K. Chakraborty, and R. Mahapatra “Improved Resistive Switching Performance of Graphene Oxide Based Flexible ReRAM with HfO_x Buffer Layer” *Journal of Materials Science: Materials in Electronics*, v. 32, 2021, pp. 2936-2945, IF-2.478.

- A. D. Paul, S. Biswas, **P. Das**, H. J. Edwards, V. R. Dhanak, and R. Mahapatra “Effect of Aluminum Doping on Performance of HfO_x-Based Flexible Resistive Memory Devices”, *IEEE Transactions on Electron Devices*, v. 67, 2020, pp. 4222-4227, IF 2.917
- **P. Das**, L. A. H. Jones, J. T. Gibbon, V. R. Dhanak, T. P. Manzanera, J. W. Roberts, R. Potter, P. R. Chalker, S.-J. Cho, I. G. Thayne, R. Mahapatra, and I. Z. Mitrovic “Band Line-up Investigation of Atomic Layer Deposited Ti-Al-O and Ga-Al-O on GaN”, *ECS Journal of Solid State Science and Technology*, v. 9, 2020, pp. 063003 (1-8), IF 2.070.
- **P. Das**, S. N. Supardan, J. D. Major, A. Hannah, Z. H. Zaidi, R. Mahapatra, K. B. Lee, R. Valizadeh, P. A. Houston, S. Hall, V. R. Dhanak and I. Z. Mitrovic “Band alignments of sputtered dielectrics on GaN”, *Journal of Physics D: Applied Physics*, v. 53, 2019, pp. 063003 (1-10), IF 3.207. (Joint first-author)
- S. Maji, S. Samanta, **P. Das**, S. Maikap, V. R. Dhanak, I. Z. Mitrovic, and R. Mahapatra “Set compliance current induced resistive memory characteristics of W/Hf/HfO_x/TiN devices”, *Journal of Vacuum Science & Technology B*, v. 37, 2019, pp. 021204 (1-7), IF 1.416.
- K. Sawangsri, **P. Das**, S. N. Supardan, I. Z. Mitrovic, S. Hall, R. Mahapatra, A. K. Chakraborty, R. Treharne, J. Gibbon, V. R. Dhanak, K. Durose, P. R. Chalker “Experimental band alignment of Ta₂O₅/GaN for MIS-HEMT applications”, *Microelectronic Engineering*, v. 178, 2017, pp. 178-181, IF 2.523.

Conferences:

- K. Sawangsri, **P. Das**, S. N. Supardan, I. Z. Mitrovic, S. Hall, R. Mahapatra, A. K. Chakraborty, R. Treharne, V. R. Dhanak, K. Durose, P. R. Chalker “Experimental band alignment of Ta₂O₅/GaN for MIS-HEMT applications”, *Insulating Films on Semiconductors* (INFOS) 2017, Potsdam, Germany. (Talk given by I. Z. Mitrovic)
- **P. Das**, S. N. Supardan, I. Z. Mitrovic, V. R. Dhanak, A. Shaw, S. Hall, A. K. Chakraborty, R. Mahapatra “Band Alignment of Sputtered Al₂O₃/GaN for MIS-HEMT Applications” *International Workshop on Physics of Semiconductor Devices* (IWPSD) 2017, Kolkata, India. (Poster presented by P. Das)
- L. A. H. Jones, **P. Das**, T. P. Manzanera, J. T. Gibbon, R. Potter, P. R. Chalker, R. Mahapatra, V. R. Dhanak, I. Z. Mitrovic “Atomic Layer Deposited TiO₂/Al₂O₃ Nanolaminates on GaN” *Insulating Films on Semiconductors* (INFOS) 2019, Clare College, University of Cambridge, UK. (Talk given by P. Das)
- **P. Das**, S. N. Supardan, J. W. Roberts, V. R. Dhanak, I. Z. Mitrovic, R. Mahapatra “Band alignment of ALD deposited ZrO₂/GaN for MIS-HEMT applications” *International Workshop on Physics of Semiconductor Devices* (IWPSD) 2019, IIT Delhi, Delhi, India (Talk given by R. Mahapatra)
- S. B. Tekin, **P. Das**, A. D. Weerakkody, N. Sedghi, S. Hall, I. Z. Mitrovic, M. Werner, J. S. Wrench, P. R. Chalker “Single and Triple Insulator Tunnel Rectifiers for Infrared Energy Harvesting” *EUROSOL-ULIS* 2020, Normandy, France (Virtual). <https://doi.org/10.1109/EUROSOL-ULIS49407.2020.9365388>.
- I. Z. Mitrovic, **P. Das**, L. A. H. Jones, J. T. Gibbon, V. R. Dhanak, R. Mahapatra, T. P. Manzanera, J. W. Roberts, R. Potter, P. R. Chalker, S.-J. Cho and I. G. Thayne “(Invited) Band Line-up of High-k Oxides on GaN” *ECS Transactions*, v. 97, 2021, <https://doi.org/10.1149/09701.0067ecst>.

Reviewer of International Journals:

- IEEE Transactions on Electron Devices (2)
- Applied Physics Letter (1)
- Journal of Physics: Condensed Matter (3)

Hobbies and interests:

I enjoy listening to music, playing badminton and carom, solving puzzles and socializing with friends and family.

Personal Details:

Date of Birth: 14th May 1987

Sex: Male

Language: Bengali, English, Hindi

Marital Status: Married

Nationality: Indian

Place: Surat, Gujarat

Date: 10/10/2023

Partha Das