AKSHPREET KAUR

DST INSPIRE Fellow
Department of Electrical and Electronics Engineering
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EDUCATIONAL QUALIFICATIONS

Degree	Institution	Year	Marks (%)
Doctor of Philosophy *(Faculty of Engineering)*	University Institute of Engineering and Technology, Panjab University Chandigarh	Dec 2019 - March 2025 *(DST INSPIRE Fellowship)*	Title: *Fabrication of Energy Harvester for Biomedical Applications (Thesis Submitted)*
Masters of Engineering *Electrical (Power Systems)*	University Institute of Engineering and Technology, Panjab University Chandigarh	2017	87.4 *(Gold medalist)* *Title: Development and Testing of a Wire Rope Tester*
Bachelors of Engineering *(Electrical and Electronics Engineering)*	University Institute of Engineering and Technology, Panjab University Chandigarh	2015	71.8
CBSE 12th	GMSSS-33 D, Chandigarh	2011	73.6
CBSE 10TH	Budha Dal Public School, Patiala, Punjab	2009	89.8

WORK EXPERIENCE

Designation	Institute/Company	From	To
Assistant Professor, Electrical Engineering	Shaheed Udham Singh College of Engineering and Technology, Tangori, Mohali, Punjab	20th Aug 2018	30th Aug 2019
Associate Patent Research Analyst	Talwar & Talwar consultants, Mohali	5th March 2018	16th Aug 2018
Assistant Professor, Electrical Engineering	Shaheed Udham Singh College of Engineering and Technology, Tangori, Mohali, Punjab	2nd Aug 2017	30th Nov 2017

AWARDS AND ACHIEVEMENTS

S.No	Award	Agency	Year
1	**Travel award** for presenting poster titled "MWCNT-PDMS based triboelectric nanogenerator for biomedical devices: A synergistic DFT and experimental evaluation" at International Workshop of Advanced Materials held at Ras Al Khaimah, UAE	Ras Al Khamiah Center for Advanced Materials, UAE	2025
2	Selected to deliver oral talk and present poster titled "Triboelectric Nanogenerators: Empowering Sports Wearables with Sustainable Energy" at the Inaugural Annual Podium Institute Conference on Sports Medicine & Technology 2024	University of Oxford, United Kingdom	2024
3	Visiting Exchange Student at Nottingham Trent University, UK under UK-India Education and Research Initiative (UKIERI) - Scheme for Promotion of Academic and Research Collaboration (SPARC) grant	UKIERI-SPARC	2024
4	Delivered a talk in association with Dr. Libu Manjakkal titled "Triboelectric nanogenerators for wearable and implantable devices"	Edinburgh Napier University, Edinburugh, Scotland	2024
5	**Best Poster Award** for research titled "Mathematical modelling and Experimental analysis of Rotating Multi-phase triboelectric nanogenerator" at the conference – Engineered Materials for Sustainable Development (EMSD)	PEC University of Technology, Chandigarh	2024
6	**Best Poster Award** for research titled "Triboelectric Nanogenerator for Self- powered Wearable Devices" at Young Scientist Conference (YSF) - India International Science Festival (IISF 2023) held at DST THSTI, Faridabad, India	Government of India	2024
7	**Best Poster Award** for paper titled "Impact of deformation on structural and electronic properties of MWCNT-PDMS based triboelectric nanogenerator" at International Conference on Thin Films & Nanotechnology: Knowledge, Leadership, & Commercialization (ICTN-KLC)	IIT Madras, Chennai, India	2023
8	**First prize** in theme "THE FIRE" for showcasing the working project titled "Triboelectric Nanogenerators for self-powered bioelectronics and sensors" at Student Innovation Festival (SIF) - India International Science Festival (IISF 2022) MANIT, Bhopal, India	Government of India	2023
9	**Gold medal** for being University topper in Masters in Engineering	Panjab University, Chandigarh	2018
10	**Best Poster Award** for paper titled "Selection of a Hall sensor for usage in a wire rope tester" at International Conference on NextGen Electronic Technologies (ICNETS)	VIT, Chennai, India	2017
11	**Second prize** at Anveshan (Student Research Convention) for presenting research on "Wireless soil moisture sensor for automation of irrigation system and conservation of energy.	Panjab University, Chandigarh	2016

PATENTS

S.No	Patent Title	Name of the Applicant	Application Number	Filing Date	Country	Status
1.	Self-powered cardiac Pacemaker with Triboelectric Nanogenerator Integration	Panjab University	202311078524	19-11-2023	India	Published
2.	Concentrator for inspecting defects in a ferromagnetic object	Panjab University	202311067612	9-10-2023	India	Provisional patent

PUBLICATIONS (Ph.D and M.E)

1. **Akshpreet Kaur**, Gaurav Sapra, and Ankur Gupta. "Recent Progress on Energy Harvesters for Biomedical Applications." *Journal of Circuits, Systems and Computers* (2021): 2130010. https://doi.org/10.1142/S0218126621300105 **(SCIE- IF:0.9)**
2. **Akshpreet Kaur**, Sukhbir Singh, Preetika Sharma, Gaurav Sapra, Ankur Gupta. "Density Functional Theory and Experimental Investigations of MWCNT-PDMS based Triboelectric Nanogenerator." *Materials Today Communications* (2022): 104742. https://doi.org/10.1016/j.mtcomm.2022.104742 **(SCIE - IF:3.7)**
3. **Akshpreet Kaur**, Ankur Gupta, Cuifeng Ying, Mohsen Rahmani, and Gaurav Sapra. "Smart Wearable Triboelectric Nanogenerator for Self-powered Bioelectronics and Therapeutics." *Microelectronic Engineering* 275 (2023): 111992 https://doi.org/10.1016/j.mee.2023.111992 **(SCIE - IF: 2.6)**
4. **Akshpreet Kaur**, Sukhbir Singh, Shivam Jadaun, Ankur Gupta, Gaurav Sapra. "Impact of deformations on structural and electronic properties of MWCNT-PDMS based Triboelectric Nanogenerator." *Journal of Materials Science: Materials in Electronics* 35.2 (2024): 121. https://doi.org/10.1007/s10854-023-11858-w **(SCIE-IF: 2.8)**
5. **Akshpreet Kaur**, Ankur Gupta, Cuifeng Ying, Mohsen Rahmani, and Gaurav Sapra. "Wearable Human Motion Monitoring Using Vertical Contact Separation Mode Triboelectric Nanogenerator." *In IOP Conference Series: Materials Science and Engineering,* vol. 1225, no. 1, p. 012031. *IOP Publishing*, 2022. https://doi.org/10.1088/1757-899X/1225/1/012031 **(Web of Science)**
6. **Akshpreet Kaur**, Parveen Kumar, Ankur Gupta, Gaurav Sapra. "Piezoelectric Biosensors in Healthcare" Enzyme-based Biosensors: Recent Advances and Applications in Healthcare. Singapore: *Springer Nature Singapore*, 2024. 255-271. http://dx.doi.org/10.1007/978-981-15-6982-1_11 **(Scopus indexed)**
7. **Akshpreet Kaur**, Shivam Jadaun, Manthan Sharma, Ankur Gupta, Gaurav Sapra, "Single Electrode Triboelectric Nanogenerator Integrated Pacemaker Lead for Cardiac Energy Harvesting" *Sensors and Actuators A: Physical, Elsevier,* 2025. 116606. https://doi.org/10.1016/j.sna.2025.116606 **(SCIE-IF: 4.1).**
8. **Akshpreet Kaur**, Shivam Jadaun, Dheeraj Yadav, Saurav Kumar, Gaurav Sapra, "Design and development of Artificial Heart Model for TENG powered Implantable Cardiac Pacemaker" *to be communicated.*
9. Jashan Kumar Mainra, **Akshpreet Kaur**, Gaurav Sapra, and Parul Gaur. "Simulation and Modelling of Triboelectric Nanogenerator for Self-powered Electronic Devices." *In IOP Conference Series: Materials Science and Engineering*, vol. 1225, no. 1, p. 012012. IOP Publishing, 2022.

https://doi.org/10.1088/1757-899X/1225/1/012012

10. Jashan Kumar Mainra, **Akshpreet Kaur**, and Gaurav Sapra. "Optimization of Triboelectric Nanogenerator for Small Power Electronics." *E3S Web of Conferences*. Vol. 184. EDP Sciences, 2020.https://doi.org/10.1051/e3sconf/202018401046
11. Kuldeep Singh, **Akshpreet Kaur**, Preetika Sharma, Gaurav Sapra, "Simulation and Experimental Evaluation of Freestanding Triboelectric Layer Nanogenerator for Self-powered Electronics" *Under Revision in Molecular system design and Engineering, Royal Society of Chemistry.* **(SCIE-IF: 3.2)**
12. Kuldeep Singh, **Akshpreet Kaur**, Preetika Sharma, Gaurav Sapra, "Multi-Phase Triboelectric Nanogenerator for Energy Harvesting and Self- powered Speed Sensing" presented at conference EMSD 2024, *(communicated to IEEE Sensors Letters for IEEE Sensors Conference 2025)* **(ESCI-IF-2.1)**
13. Ashish Kalra, **Akshpreet Kaur**, Nisha Tayal, Gaurav Sapra "Temperature Effect on the Performance of PTFE-Based Triboelectric Nanogenerator" *Communicated to Journal of The Institution of Engineers (India): Series D, Springer via conference ICPMMM 2024, Kolkata, India*
14. **Akshpreet Kaur**, et al. "Non-destructive Evaluation and Development of a New Wire Rope Tester Using Parallely Magnetized NdFeB Magnet Segments." *Journal of Nondestructive Evaluation* 37.3 (2018): 61. https://link.springer.com/article/10.1007/s10921-018-0516-y **(SCIE IF: 2.6)**
15. **Akshpreet Kaur**, et al. "Selection of a Hall Sensor for Usage in a Wire Rope Tester." *Computational Signal Processing and Analysis*. Springer, Singapore, (2018) 361-371. https://link.springer.com/chapter/10.1007/978-981-10-8354-9_33
16. Sukesha Sharma, Manu Sharma, Nitika Garg, Akshpreet Kaur, Gaurav Sapra, Naveen Aggarwal, JK Goswami, "Design and Development of Sensing Unit for Wire Rope Tester" IETE Journal of Research, 1-13, (2024), Taylor & Francis. https://doi.org/10.1080/03772063.2024.2409716 **(SCIE IF:1.5)**

CONFERENCES

S. No.	Conference Full Name	Organizer	Year	Title
1	International Workshop of Advanced Materials (IWAM)	Ras Al Khaimah, UAE	2025	MWCNT-PDMS based triboelectric nanogenerator for biomedical devices: A synergistic DFT and experimental evaluation
2	Podium Institute Conference on Sports Medicine & Technology	University of Oxford, UK	2024	Triboelectric Nanogenerators: Empowering Sports Wearables with Sustainable Energy
3	Engineered Materials for Sustainable Development (EMSD) 2	PEC, Chandigarh, India	2024	Mathematical modelling and Experimental analysis of Rotating Multi-phase triboelectric nanogenerator
4	Young Scientist Conference - India International Science Festival (YSF-IISF)	DST THSTI, Faridabad, India	2023	Presentation: Triboelectric Nanogenerator for Self-powered Wearable Devices
5	CHASCON - National Conference on Global Science for Global Well-being	Panjab University, Chandigarh, India	2023	Shodh Samwaad: Energizing Tomorrow: Unveiling Triboelectric Nanogenerators' Potential

6	International Conference on Thin Films & Nanotechnology: Knowledge, Leadership, & Commercialization (ICTN-KLC)	IIT Madras, Chennai, India	2023	Impact of deformations on structural and electronic properties of MWCNT-PDMS based Triboelectric Nanogenerator
7	International Conference on Multidisciplinary Aspects of Materials in Engineering (IC-MAME)	UIET, Panjab University, Chandigarh, India	2021	Paper: Wearable Human Motion Monitoring Using Vertical Contact Separation Mode Triboelectric Nanogenerator
8	International Conference on NextGen Electronic Technologies: Silicon to Software (ICNETS2) 2017	VIT, Chennai, India	2017	Paper: Selection of a Hall Sensor for Usage in a Wire Rope Tester Published in Springer Book Series: Computational Signal Processing and Analysis
9	IEEE WIE Delhi Section Student Congress 2013	NSIT, Delhi, India	2013	Attended as college representative
10	IEEE National Conference on Applied Engineering and Research (ICAER) 2012	UIET, Panjab University, Chandigarh, India	2012	Attended to promote student interest in research
11	National Conclave on Scientific, Engineering and Technology Upgradation (SETU) 2012	Panjab University, Chandigarh, India	2012	Attended for industrial exposure through talks by top industrialists

PROJECTS	
PhD Project **PUAARG** (Sept 2023 – Sept 2024)	• Title of Project: Design and Development of an Artificial Cardiac Model for Self-Powered Implantable Cardiac Pacemaker • Funding Amount: Rs. 50,000 • Principle Investigators: Dr. Gaurav Sapra, Associate Professor, UIET, PU
PhD Project **NTU-PU Partnership Fund** (June 2021 – July 2022)	• Title of Project: Self-powered Wearable Sensor for Disease Diagnosis • Funding Amount: £10,000 • Principle Investigators: Dr. Gaurav Sapra, Associate Professor, UIET, PU and Prof. Mohsen Rahmani, Nottingham Trent University, UK
M.E Project **Wire Rope Tester** (July 2016 – May2017)	• Research project in association with **Oceaneering International Services Limited**. • Development of Indigenous Wire Rope Tester (WRT) to detect broken steel strands in a wire rope
B.E Project **Automation of irrigation system**	• Development and Deployment of Wireless Sensor Network For Detecting Soil Moisture and Automation of Irrigation System. • Designed a system that incorporates a soil moisture sensor that senses the soil volumetric water content by sending measured moisture content wirelessly through RF transmitter and receiver.

OTHER ACTIVITIES	
Chairperson	• WIE-IEEE UIET (Women in Engineering-affinity group of IEEE) in 2013 • Organized IEEE Fest AARAMBH, National and International Conferences and various other events to boost up Women in Engineering.
President	MITRA-Touching Lives, a Non-profit Organization of UIET raising funds by organizing fun-events and workshops witnessing huge participation and work altogether for upliftment of society (2014).
Convener	IEEE National Conference on Applied Engineering and Research 2013
Organizer	• UGC sponsored National seminar on "Active noise control and its applications", March 2017 • TEQUIP sponsored Faculty Development Program on "Renewable sources impact on Modern Power System Operation", March 2017 • TEQUIP sponsored Faculty Development Program on "PLC and Automation" in association with Omron Automation Gurugram, August 2016 • TEQUIP sponsored international conference on "Recent advances in Engineering and computational sciences", March 2014
Community Outreach mentor	A part of Chandigarh Region Innovation and Knowledge Cluster (CRIKC), mentored school students from GMHS-22 and GMSSS-27, Chandigarh under DST INSPIRE MANAK Awards to nurture scientific curiosity and innovation in year 2022 and 2023.

RESEARCH METRICS			
H index (Google scholar)	7	**Total Citations** (Google scholar)	101
Cumulative Impact Factor	18.2	**Orcid Id**	0000-0003-3252-7635

PERSONAL DETAILS	
Permanent Address	House No. 4 BN, Dhillon Marg, Model Town, Patiala, Punjab
Date of Birth	20th July 1993
Nationality	Indian