Ankit Verma
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About Me

I am an enthusiastic researcher, having knowledge of Electronics Engineering and Materials Science Engineering for a meticulous approach to the Fabrication, Characterization, and Modelling of Thin Film Semiconductor devices for bioelectronic and logic circuit applications. I am passionate about developing Thin Film Semiconductor Devices for Electronic Circuits, Sensing, and logic circuits applications.

Experience

- Assistant Professor at SRM Institute of Science and Technology NCR Campus Modinagar, Ghaziabad UP from February 2024 to till now.
- Teaching Assistant at Indian Institute of Technology (BHU), Varanasi, India from July 2018- July 2023.
- Teaching Assistant at the Indian Institute of Technology (BHU), Varanasi, India from July 2016 to June 2018.

Awards/Achievement

- Ph.D. fellowship from Ministry of Human Resource and Development, India, July 2018- July 2023.
- M.Tech fellowship from Ministry of Human Resource and Development, India, July 2016- July 2018.
- Travel Grant to attend IEEE 5NANO2023 conference in 2023.
- Secured AIR 525 in Gate 2018.

Educational Background

• **Ph.D. in Microelectronics Engineering, (2018-2023)** **Indian Institute of Technology (BHU), Varanasi India.** Percentage/Class/CGPA: 9.00 CGPA **Thesis Title-** *Fabrication and Characterization of Organic Thin Film Transistors for Ammonia Sensing Application.*
• **M. Tech. in Microelectronics Engineering, (2016-2018)** **Indian Institute of Technology (BHU), Varanasi India.** Percentage/Class/CGPA: 8.63 CGPA **Thesis Title-** *Low Leakage Current SRAM Cell Design using Sleepy Stack and Low Power Quencher.*
• **B. Tech. in Electronics and Communication Engineering, (2010-2014)** **Uttar Pradesh Technical University, Lucknow India.** Percentage/Class/CGPA: 72.56% **Thesis Title-** *RFID based Railway Reservation System*
• **Intermediate UP Board** Percentage/Class/CGPA: First Div.
• **High School UP Board** • Percentage/Class/CGPA: First Div.

Research Interest

- Functional materials, transport study in organic semiconductors and organic polymer nanocomposites, flexible organic/inorganic electronic TFT devices, synthesis of nanocomposites and self-assembled materials,

transparent flexible transistors, tuned organic/inorganic thin films structures and devices, metal oxide-based nanostructures, photosensors, 2D materials, electronic sensors/biosensors, synthesis and characterization of quantum dots/nanoparticles.

- Fabrication and Modelling of TFT devices for logic circuits implementation.
- Design and Simulation of Low-power VLSI circuits.

Experimental Expertise

- Hands-on experience with wet chemical synthesis and vacuum deposition techniques, including sol-gel, inkjet printing, spin coating, floating film transfer, thermal evaporation, electron-beam evaporation, sputtering, and layer-by-layer techniques for fabricating various electronic devices.
- Application and interpretation of structural, optical, and electrical relationships in single and nanocomposite materials using various complementary tools: SEM, TEM, AFM, XRD, UV-Vis-NIR Spectroscopy, spectrophotometer, etc.
- Fabrication and analysis of silicon/flexible PET-based photosensors, gas sensors, biosensors, and logic gates.
- Fabrication and Modelling of TFT devices for logic circuits implementation.

Core Skills

- Experience in the fabrication of thin film devices using sol-gel and vacuum evaporation technique.
- Hands-on experience with various characterization tools such as AFM, SEM, TEM, FTIR, Spectrometer, etc.
- Experience in the fabrication and characterization of thin film devices on Silicon and Flexible Substrate for sensing biosensing and healthcare applications.
- Design and simulation of low-power VLSI design circuits using Cadence Virtuoso.
- Digital circuit design using Verilog HDL.

Journal Publications

1. **A. Verma,** V. K. Singh and V. N. Mishra, **"A Low-Voltage Operated Organic TFT-Based Inverter with Solution-Processed LiZnOx Dielectric," in *IEEE Transactions on Electron Devices*,** vol. 70, no. 9, pp. 4815-4821, Sept. 2023**, *doi: 10.1109/TED.2023.3297557.***
2. **A. Verma**, D. Kumar, V. N. Mishra and R. Prakash**, "A Self-Assembled Polymer Nanocomposite-Based Low-Voltage White Light Phototransistor With UV-Cured Synthesized LaZrOx Dielectric," in *IEEE Transactions on Electron Devices*,** vol. 70, no. 7, pp. 3575-3581, July 2023**, *doi: 10.1109/TED.2023.3274500.***
3. **A. Verma**, P. Kumar, V. K. Singh, V. N. Mishra, and R. Prakash**, "Introduction of graphene oxide nanosheets in self-oriented air-stable poly(3-hexylthiophene-2,5-diyl) to enhance the ammonia gas sensing of a p-channel thin film transistor," *Sensors Actuators B Chem*.**, vol. 385, p. 133661, Jun. 2023**, *doi: 10.1016/J.SNB.2023.133661.***
4. **A. Verma,** S. Gupta, V. N. Mishra, and R. Prakash**, "A Low-Voltage, Self-Oriented Organic Polymer Nanocomposite-Based Flexible TFT for Ammonia Gas Sensing at Room Temperature," in *IEEE Transactions on Electron Devices*,** vol. 70, no. 5, pp. 2453-2459, May 2023**, *doi: 10.1109/TED.2023.3255835.***
5. **A. Verma,** V. N. Mishra, and R. Prakash**, "A Self-Aligned, Solution-Processed Low-Voltage Operated Organic Thin-Film Transistor for Ammonia Gas Sensing at Room Temperature," *in IEEE Sensors Journal*, vol. 23, no. 6, pp. 5561-5568, March 15, 2023, *doi: 10.1109/JSEN.2023.3236438.***
6. **A. Verma,** V. N. Mishra, and R. Prakash**, "Self-Assembled Au/P3HT, High-k Bilayer Dielectric-Based Solution Processed Low Voltage OTFT for Multiparametric Ammonia Sensor at Room Temperature," in *IEEE Transactions on Electron Devices*,** vol. 70, no. 1, pp. 281-287, November 2022, ***doi: 10.1109/TED.2022.3224092.***
7. **A. Verma**, V. N. Mishra, and R. Prakash**, "Air-Stable Highly Sensitive Self-Assembled P3HT/GQD Nanocomposite-Based Organic Thin-Film Transistor for Multiparametric H_2S Real-Time Detection at Room Temperature," in *IEEE Sensors Journal*,** vol. 23, no. 1, pp. 127-134, November 11, 2022**, *doi: 10.1109/JSEN.2022.3221997.***
8. **A. Verma,** P. K. Sahu, V. Chaudhary, A. K. Singh, V. N. Mishra, and R. Prakash, **"Fabrication and Characterization of P3HT/MoS_2 Thin-Film Based Ammonia Sensor Operated at Room Temperature," in *IEEE Sensors Journal*,** vol. 22, no. 11, pp. 10361-10369, June 1, 2022**, *doi: 10.1109/JSEN.2022.3170698.***
9. M. Singh Mehrolia, D. Kumar, **A. Verma** and A. Kumar Singh, "**Fabrication and Compact Modeling of Low-Voltage Flexible Organic TFT Using Self-Assembly of Conductive Polymer Channel Over High-k PMMA/$SrZrO_x$ Dielectric**," in ***IEEE Transactions on Electron Devices,*** vol. 71, no. 10, pp. 6055-6060, Oct. 2024, ***doi: 10.1109/TED.2024.3442165.***

10 M. S. Mehrolia, D. Kumar, **A. Verma**, and A. K. Singh, "**Fabrication and Characterization of Self-Assembled Low Voltage Operated OTFT for H_2S Gas Sensor for Oil and Gas Industry**," in ***IEEE Transactions on Electron Devices,*** vol. 71, no. 1, pp. 769-776, Jan. 2024, **doi: 10.1109/TED.2023.3336301.**

11 V. K. Singh**, A. Verma**, P. Kumar and V. N. Mishra**, "Solution-Processed, Highly-Efficient Organic Field-Effect Transistor Based Hydrogen Sulfide Gas Sensor at Sub-ppm Regime," in *IEEE Sensors Journal*,** vol. 23, no. 15, pp. 16600-16607, 1 Aug.1, 2023**, *doi: 10.1109/JSEN.2023.3288932.***

12 M. S. Mehrolia, **A. Verma** and A. K. Singh, "**Comparative Analysis of Compact modeled of Low-voltage OTFTs on Flexible and Silicon Substrates for the Implementation of logic Circuits**," in ***IEEE Journal on Flexible Electronics***, doi: ***10.1109/JFLEX.2024.3471489***.

13 M. S. Mehrolia, **A. Verma,** N. K. Chourasia, A. Pandey and A. K. Singh, "**A Proposed Fully Transparent, Flexible, and Compact Modeled Low Voltage TFT for Implementation of Full Adder and Subtractor**," in ***IEEE Journal on Flexible Electronics,*** doi: ***10.1109/JFLEX.2024.3400760.***

Conferences Publications

1 **A. Verma, V. K. Singh, V. N. Mishra and R. Prakash, "**A Fully solution-casted low-voltage driven organic TFT by Floating Film Transfer deposited organic channel on Lanthanum Oxide dielectric film**," 2023 IEEE 20th India Council International Conference (INDICON), Hyderabad, India, 2023, pp. 951-956, doi: 10.1109/INDICON59947.2023.10440873.**

Participated in Seminar/Industrial Training

1. 30 days summer industrial training at "**National Thermal Power Corporation Tanda, Ambedkar Nagar, India**", 2017.
2. Attended a short course on "**Modeling and Simulation of Nano-Transistors at IIT Kanpur, India**", January 21 - 25, 2019.
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Declaration

I do hereby declare that all the above information given by me is true to the best of my knowledge and belief.

Ankit Verma