

## Ali Nawaz, Ph.D.

### Formal Education

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- 2014 – 2018**      Ph.D. in Physics  
Post-graduate program in Physics  
**Federal University of Paraná – UFPR, Curitiba, Brazil**
- 2009 – 2012**      Masters of Science in Electronics  
Department of Electronics Design  
**Mid Sweden University – MIUN, Sundsvall, Sweden**
- 2005 – 2009**      Bachelors of Science in Electronics  
Department of Physics  
**COMSATS University Islamabad, Pakistan**

### Work Experience

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- Since March 2021**      Position:              Researcher  
Institution:            Center for Sensors and Devices  
Bruno Kessler Foundation – FBK  
Trento, Italy
- May 2018 – Dec. 2019**      Position:              Postdoctoral Researcher  
Institution:            Brazilian Nanotechnology National Laboratory (LNNano)  
Brazilian Center for Research in Energy and Materials (CNPEM)  
Campinas, Brazil
- Mar. 2011 – Feb. 2012**      Position:              Master's Thesis Research Trainee  
Institution:            Holst Centre/TNO, High Tech Campus  
Phillips Research Laboratories  
Eindhoven, The Netherlands

### Scientific Contributions

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#### Patents

1. **A. Nawaz**, L. Mercês, D. M. de Andrade, D. H. S. de Camargo, C. C. B. Bufon, *Vertical field-effect transistor and use in sensors* (Application Number: BR1020200027492; Registration Institution: National Institute of Industrial Property – INPI; Registration Date: 02/10/2020).

#### Publications in scientific journals

1. **A. Nawaz**, A. Cian, L. Ferrario and A. Picciotto, Multi-cycle chamber conditioning for plasma etching of SiO<sub>2</sub>: From optimization to stability in lot processing, **Plasma Chemistry and Plasma Processing**, **2024** (impact factor: 2.60).
2. L. Mercês, L. M. M. Ferro, **A. Nawaz** and P. Sonar, Advanced Neuromorphic Applications Enabled by Synaptic Ion-Gating Vertical Transistors, **Advanced Science**, 2305611, **2024** (impact factor: 14.30).

3. D. M. de Andrade, L. Mercés, **A. Nawaz** and C. C. B. Bufon, *Pushing on-chip photosensitivity forward using edge-driven vertical organic phototransistors*, **ACS Applied Electronic Materials** 5, 3038, **2023** (impact factor: 4.30).
4. L. Parellada-Monreal, F. Acerbi, A. Ficarella, A. Franzoi, A. Gola, S. Merzi, **A. Nawaz**, M. Ruzzarin and G. Paternoster, **Nuclear Inst. and Methods in Physics Research, A** 1049, 168042, **2023** (impact factor: 1.50).
5. M. Stephen, **A. Nawaz**, S. Y. Lee, P. Sonar and W. L. Leong, *Biodegradable Materials for Transient Organic Transistors*, **Advanced Functional Materials** 33, 2208521, **2023** (impact factor: 18.50).
6. A. Islam, K. Usman, Z. Haider, M. F. Alam, **A. Nawaz** and P. Sonar, *Biomass-Derived Materials for Interface Engineering in Organic/Perovskite Photovoltaic and Light-Emitting Devices*, **Advanced Materials Technologies**, 8, 2201390, **2023** (impact factor: 6.40).
7. **A. Nawaz**, L. Mercés, L. M. M. Ferro, P. Sonar and C. C. B. Bufon, *Impact of Planar and Vertical Organic Field-Effect Transistors on Flexible Electronics*, **Advanced Materials** 35, 2204804, **2022** (impact factor: 27.40).
8. **A. Nawaz**, M. Koehler, A. Kumar, L. Mercés, A. B. R. Abreu, C. C. B. Bufon, J. P. M. Serbena and I. A. Hümmelgen, *Improvement of poly(3-hexylthiophene-2,5-diyl) electron mobility through complete elimination of regioregularity defects*, **ChemRxiv** **2021** (DOI: 10.33774/chemrxiv-2021-n177f).
9. **A. Nawaz**, Q. Liu, W. L. Leong, K.-F. Smith and P. Sonar, *Organic electrochemical transistors for in vivo bioelectronics*, **Advanced Materials** 33, 2101874, **2021** (impact factor: 27.40).
10. L. Mercés, G. Candiotti, L. M. M. Ferro, A. de Barros, C. V. S. Batista, **A. Nawaz**, A. Riul Jr., R. B. Capaz and C. C. B. Bufon, *Reorganization energy upon controlled intermolecular charge-transfer reactions in monolithically integrated nanodevices*, **Small** 17, 2103897, **2021** (impact factor: 13.00).
11. S. Yuvaraja, **A. Nawaz**, Q. Liu, D. Dubal, S. Surya, K. N. Salama and P. Sonar, *Organic Field-Effect Transistor-Based Flexible Sensors*, **Chemical Society Reviews** 49, 3423, **2020** (impact factor: 40.40).
12. **A. Nawaz**, L. Mercés, D. M. de Andrade, D. H. S. de Camargo and C. C. B. Bufon, *Edge-driven nanomembrane-based vertical organic transistors showing a multi-sensing capability*, **Nature Communications**, 11, 841, **2020** (impact factor: 14.70).
13. **A. Nawaz** and I. A. Hümmelgen, *Poly(vinyl alcohol) gate dielectric in organic field-effect transistors*, **Journal of Materials Science: Materials in Electronics** 30, 5299, **2019** (impact factor: 2.80).
14. **A. Nawaz**, A. C. B. Tavares, T. T. Do, B. B. Patil, P. Sonar and I. A. Hümmelgen, *Experimental and modeling study of low-voltage field-effect transistors fabricated with molecularly aligned copolymer floating films*, **Flexible and Printed Electronics** 3, 015006, **2018** (impact factor: 2.80).
15. **A. Nawaz**, A. Kumar and I. A. Hümmelgen, *Ultra-high mobility in defect-free poly(3-hexylthiophene-2,5-diyl) field-effect transistors through supra-molecular alignment*, **Organic Electronics** 51, 94, **2017** (impact factor: 2.70).
16. **A. Nawaz**, I. Cruz-Cruz, J. S. Rego, M. Koehler, S. P. Gopinathan, A. Kumar and I. A. Hümmelgen, *Polymer-dielectric molecular interactions in defect-free poly(3-hexylthiophene): dependence and consequences of regioregularity on transistor charge transport properties*, **Semiconductor Science and Technology** 32, 084003, **2017** (impact factor: 1.90).
17. **A. Nawaz**, M. S. Meruvia, D. L. Tarange, S. P. Gopinathan, A. Kumar, A. Kumar, H. Bhunia, A. J. Pal and I. A. Hümmelgen, *High mobility organic field-effect transistors based on defect-free regioregular poly(3-hexylthiophene-2,5-diyl)*, **Organic Electronics** 38, 89, **2016** (impact factor: 2.70).

18. **A. Nawaz**, C. de Col and I. A. Hümmelgen, *Poly(Vinyl Alcohol) Gate Dielectric Treated With Anionic Surfactant in C<sub>60</sub> Fullerene-Based n-Channel Organic Field Effect Transistors*, **Materials Research** 19, 1201, **2016**.
19. D. Jastrombek, **A. Nawaz**, M. Koehler, M. S. Meruvia and I. A. Hümmelgen, *Modification of the charge transport properties of the copper phthalocyanine/poly(vinyl alcohol) interface using cationic or anionic surfactant for field-effect transistor performance enhancement*, **Journal of Physics D: Applied Physics** 48, 335104, **2015** (impact factor: 3.10).
20. C. de Col, **A. Nawaz**, I. Cruz-Cruz, A. Kumar, A. Kumar and I. A. Hümmelgen, *Poly(vinyl alcohol) gate dielectric surface treatment with vitamin C for poly(3-hexylthiophene-2,5-diyl) based field effect transistors performance improvement*, **Organic Electronics** 17, 22, **2015** (impact factor: 2.70).
21. **A. Nawaz**, I. Cruz-Cruz, R. Rodrigues and I. A. Hümmelgen, *Performance enhancement of poly(3-hexylthiophene-2,5-diyl) based field effect transistors through surfactant treatment of the poly(vinyl alcohol) gate insulator surface*, **Physical Chemistry Chemical Physics** 17, 26530, **2015** (impact factor: 2.90).
22. **A. Nawaz**, Z. Rabeel and N. A. Shah, *Investigations on the Physical Properties of CdCl<sub>2</sub> Heat-Treated ITO/CdTe/CdS Thin Films Solar Cell*, **World Applied Sciences Journal** 31, 1522, **2014**.
23. N. A. Shah, **A. Nawaz**, A. Kanwal and W. A. Syed, *Comparative Study of Cadmium Sulfide Thin Films at Room and Low Temperatures Fabricated by Closed Space Sublimation Technique*, **World Applied Sciences Journal** 28, 548, **2013**.

## Editorial Activities

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### Editorial Board Member

**Since 2020**      Frontiers in Electronics (Frontiers)

### Journal Issues Edited

<b>Feb. 2021</b>	Role:	Associate Guest Editor
	Special issue:	Flexible electrochemical biosensors: Materials and device
	Journal:	Frontiers in Electronics (Frontiers)
<b>Mar. 2022</b>	Role:	Guest Editor
	Special issue:	Organic Bioelectronic Materials and Devices for In Vitro/Vivo Diagnostics
	Journal:	Biosensors (MDPI)
<b>Apr. 2023</b>	Role:	Guest Editor
	Special issue:	Organic Bioelectronic Materials and Devices for Biosensing Applications
	Journal:	Biosensors (MDPI)

## Certifications

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<b>Nov. 2023</b>	Course:	Vacuum Technologies
	Administered by:	Center for Sensors and Devices – SD Bruno Kessler Foundation, Trento, Italy
	Instructor:	Prof. Giuseppe Firpo (University of Genoa)

<b>Sept. 2019</b>	Course:	ACS Reviewer Lab Peer-review training for scientific researchers
	Administered by:	American Chemical Society
<b>Mar. 2016</b>	Course:	Flexible Printed Electronics
	Administered by:	Postgraduate program in Physics Federal University of Paraná, Curitiba, Brazil
	Instructor:	Prof. Dr. Ana Claudia Arias (UC Berkeley)

## Membership of Scientific Societies

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<b>2023</b>	European Materials Research Society (E-MRS)
<b>2020</b>	Institute of Electrical and Electronics Engineers (IEEE)
<b>2020</b>	IEEE Nanotechnology Council (NTC)
<b>2017</b>	Brazilian Materials Research Society (B-MRS)
<b>2015</b>	International Society for Optics and Photonics (SPIE)

## Journal Referee

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<b>2024</b>	Journal of Vacuum Science & Technology B (AIP)
<b>2023</b>	Applied Materials & Interfaces (ACS)
<b>2023</b>	Micromachines (MDPI)
<b>2022</b>	Nature Communications (Nature)
<b>2021</b>	Advanced Materials (Wiley-VCH)
<b>2021</b>	Nano Select (Wiley-VCH)
<b>2020</b>	Frontiers in Electronics (Frontiers)
<b>2017</b>	Condensed Matter (MDPI)
<b>2017</b>	Journal of Materials Science: Materials in Electronics (Springer Verlag)
<b>2016</b>	Journal of Physics and Chemistry of Solids (Elsevier)
<b>2014</b>	International Journal of Electronics (Taylor and Francis)