# CLÁUDIA BUGA

**Biomedical Engineer &**
**Ph.D. Student in Materials Engineering**

## About Me

I am a Biomedical Engineer, passioned about research and development in the field of materials. I have previously worked as a research fellow for the University of Coimbra, and I am currently pursuing a PhD degree in Materials Engineering, at Minho University. Simultaneously, I have been working as a Research Technician for the Digital Transformation CoLab, since 2020. My ongoing research interests include the development and optimization of sensors based upon flexible and printed electronics.

## Education History

**Oct 2020 - Present**
PhD Student in Materials Engineering, Minho University
Title: Development of a new concept for a Bioinspired Multisensing E-Skin

**May 2019**
English Certification, Cambridge School, Coimbra

**Sep 2012 - Mar 2018**
MSc Student in Biomedical Engineering (integrated masters), Coimbra University
Master Thesis on "Efficient Nanossistems for Photodynamic Therapy"

## Relevant Skills

- **Language Skills**
  Portuguese: Proficient (native language)
  English: Advanced (C1 certificate level)
  Spanish: Intermediate

- **Computational Skills**
  Basic Software: Office (Word, Excell and PowerPoint)
  Specialized Software: Matlab, Processing, Arduino, Inkscape, Gimp, Origin, SPSS

- **Research and Social Skills**
  Dynamic, responsible, great work spirit, easy adaptability;
  Good organizational and management skills;
  Great scientific writing and scientific drawing skills;
  Creativity and perseveerence.

## Contact Information

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# Professional Experience

## Mar 2020 - Present

**Research Technician at the Digital Transformation CoLAB, Azurém - Guimarães**
**Project: Co-design and Co-development of Cyber Physical Systems**
**Detailed experience:**

- Investigation in the field of organic and composite materials for printed electronics;
- Ink formulation resorting to carbon-based composites through ultrasonic dispersion;
- Experience with inkjet and screen printing of commerial inks (PEDOT:PSS, silver, carbon);
- Application of otimization methodology to ink formulation, printing procedures, and sensor design (design of experiments);
- Material characterization techniques such as SEM, TGA, FTIR, EIS, Mechanical behavior;
- Design of screen printing boards (sensor units, sensor arrays and interconnects);
- Planning and writing of review and scientific articles.

## Nov 2018 - Nov 2019

**Research Fellow at the Mechanical Engineering Department, University of Coimbra**
**Project: Add.Additive**
**Detailed experience:**

- Development and characterization of natural based materials for 3D printing (PCL and PCL/cellulose composites);
- Prototyping and assessing the shape memory of 3D printed semi-crystalline materials;
- Writing of a review article on the topic.

## Jul 2018 - Nov 2018

**Research Fellow at the Chemical Engineering Department, University of Coimbra**
**Project: Demo@Polyfenton**
**Detailed experience:**

- Development of a silica-metal polymeric complex, aimed at the treatment of waste water from textile companies, throught the Fenton process;
- Manipulation of a heterogeneous catalytic reactor;
- Scale-up of the reactor and process to industial dimensions;
- Efficiency characterization of the resulting material (UV-VIS, TOC, SEM-EDS).

## Jun 2016 - Fev 2018

**Research Intern at the Chemical Engineering Department, University of Coimbra**
**Detailed experience:**

- Research on more efficient nanossystems for photodynamic therapy;
- Formulation of nanoemulsions and mesoporous silica-nanocapsules through the sol-gel method;
- Characterization techniques (DLS, Zeta-Potential, UV-VIS, SEM/TEM, TGA)
- Writing of the Master Thesis.

## List of Publications

- A. C. Pinho, C. S. Buga, and A. P. Piedade, "The chemistry behind 4D printing," Appl. Mater. Today, vol. 19, p. 100611, 2020.
- Buga, Cláudia S. & Viana, Julio. (2021). A Review on Materials and Technologies for Organic Large-Area Electronics. Advanced Materials Technologies. 6.
- C. S. Buga and J. C. Viana, "The role of printed electronics and related technologies in the development of smart connected products," Flex. Print. Electron., vol. 7, no. 4, p. 43001, 2022.
- C. Buga and J. C Viana, "Optimization of print quality of inkjet printed PEDOT:PSS patterns," Flex. Print. Electron., vol. 7, no. 4, p. 45004, 2022.
- Buga C.S., Viana J.C. Inkjet Printing of functional inks for smart products. In: Tolouei-Rad M, editor. Production Engineering. IntechOpen; 2022.
- Buga, C.S.; Viana, J.C. A Design of Experiments Study on Inkjet Printed PEDOT:PSS Temperature Sensors. IEEE Sensors Journal, vol. 24, no. 7, pp. 9449-9461, 2024.
- Buga, C.S., Tavares, C.J. and Viana, J.C. (2024), Characterization of Microstructured Multiwalled Carbon Nanotube/Polydimethylsiloxane Composites for Piezoresistive Sensing Applications. Adv. Eng. Mater. 2400132, 2024.

## List of Conferences

- Buga, C.S., Viana, J.C., 14th International Symposium on Flexible Organic Electronics (ISFOE21) held in Thessaloniki, July 5-8, 2021. Oral Presentation: Design of Experiments Study of PEDOT:PSS Inkjet Printed Patterns.
- Buga, C.S., Viana, J.C., Materiais 2022 held in Marinha Grande, April 10 – 13. Oral presentation: Microstructured MWCNT/PDMS composites for multiple sensing applications.
- Buga, C.S., Viana, J.C., Materiais 2023 held in Guimarães, April 3 – 6. Oral presentation: Thermoresistive Properties of Inkjet Printed PEDOT:PSS Patterns.
- Buga, C.S., Viana, J.C., LOPEC 2024 held in Munich, March 5 – 7. Oral presentation: On route to develop a novel smart e-skin: A study on the Materials, Designs and Printed Electronics Technologies.

## Additional Information

- CIÊNCIA ID: 5E1A-08D2-9701
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- ResearchGate: researchgate.net/profile/Claudia-S-Buga