Dr. Dimitris BARMPAKOS

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dbarmpakos@uniwa.gr

https://scholar.google.com/citations?user=4nFB3rEAAAAJ&hl=en

https://www.webofscience.com/wos/author/record/K-6845-2019

Sex Male | Date of birth 05/07/1990 | Nationality Greek

WORK EXPERIENCE

April 2024 – Today

Adjunct Lecturer

Department of Biomedical Engineering, University of West Attica [www.uniwa.gr]
Analog Electronics

Research - Teaching

October 2014 – Today

Postdoctoral Researcher – Academic Scholar

Department of Electrical and Electronic Engineering, University of West Attica [www.uniwa.gr]
microSENSES laboratory [microsenses.eee.uniwa.gr]

- Sensor development using printing techniques
- Evaluation of sensors and devices
- Development of IoT systems
- Teaching laboratory courses for “Computer Systems Architecture” – “Microcontrollers – Embedded Systems”

Research - Teaching

October 2022 – November 2023

Postdoctoral Researcher – Electronic Engineer

National Technical University of Athens [www.ntua.gr]

- Project “ThermoSkin: A novel self-sterilizing surface for fighting Community and Hospital Acquired infections”
- Embedded systems development
- Microheater design-simulation-fabrication
- PCB Design (Altium Designer)
- Embedded Web Interface (API, Front-end)
- Firmware Development (ESP32)

Research

April 2021 – June 2023

Postdoctoral Researcher – Electronic Engineer

Agricultural University of Athens [www.aua.gr]
Laboratory of Cell Technology

- Design of PCBs
- Firmware Development
- Development of embedded systems for sensor measurement and transmission

Research

July 2017 – August 2021

Researcher – PhD Candidate

National Centre for Scientific Research “Demokritos”
Institute of Nanoscience and Nanotechnology [inn.demokritos.gr]
Research

March 2016 – Today

Embedded Engineer (Contract - Shareholder)

Recycglobe P.C. [www.recycglobe.com]

- Firmware development
- Testing and evaluation of prototypes
- PCB Review
- Supervision of small – scale PCB production

Consulting – IoT Industry

March 2015 – July 2021

Embedded Engineer – Technical Consultant (Contract)

Citycrop [www.citycrop.io]

- Firmware development
- Sensor – actuator control
- Low level (UART) API development

Consulting – IoT Industry

EDUCATION AND TRAINING

2017 – 2021

Doctor of Philosophy (PhD) in Flexible and Printed Electronics

EQF 8

University of Patras, Department of Physics

Thesis: «A Multi Parametric Measurement and Control System Implemented on Flexible Substrates with Printing Technologies»

2019 – 2020

Embedded system design and microcontroller applications for the Internet of Things [20 ECTS, 500 hr.]

Hellenic Open University

2019

High Performance Computing Autumn Academy

University of Cambridge

2014 – 2017

Design and Development of Advanced Electronics Systems (MSc)

EQF 7

Technological Educational Institute of Athens, Faculty of Technological Applications, Department of Electronics Engineering

Thesis: «Development of Flexible Electronic Devices using Inkjet Printing Technology»

2010 – 2014

Electronic Engineer (BSc)

EQF 6

Technological Educational Institute of Central Greece, Faculty of Technological Applications, Department of Electronics Engineering

PERSONAL SKILLS

Mother tongue: Greek

Other languages

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C1	C1	C1	C1	C1
French	B1	B1	B1	B1	B1

Job-related skills: Research and development of prototypes, working in laboratory environments, familiar with laboratory equipment for electronics development, evaluation and debugging, development and assessment of models for feature extraction and pattern recognition, technical documentation

Technical skills: Electrical measurements – development of measurement setups, source-meters, logic analyzers, oscilloscopes, probers, 3D printers, CNC etc.). Design and development of rigid and flexible electronics, inkjet printing, PCB, optical microscopy, analysis of SEM, TEM, AFM results).

Altium Designer, LabVIEW, Rhino 3D, OriginLab, Atmel ATtiny – ATmega (Arduino & Codevision), STM32F4x | F7x | L4x : STM32CubeMX (HAL drivers) & CLion) – Arm mbed, C, Python, MATLAB, COMSOL, C++, UART, SPI, I2C, CAN etc., wireless transmission (GSM, WiFi, BLE), TCP sockets, HTTP/HTTPS (mbedTLS), ESP32/ESP8266, embedded Linux dev boards (Raspberry Pi, Beaglebone etc.), documentation (Git, Doxygen), Cooperation tools (Trello, Asana, Slack, Azure DevOps)

Research Interests: Printed – flexible electronics, sensor design and development (humidity, temperature, stress-strain, flow, electrochemical), microheates, multi-layer printed devices, printed thermogenerators, techniques for interfacing printed with traditional electronics, microelectronic devices based on metallic nanoparticles, conductive polymers, hybrid graphenic dispersions, biocompatible sensors

Other skills: Lighting design, Interactive Hardware – Human Machine Interface, sEGMs, Tennis, Muay-Thai

Driving license B

ADDITIONAL INFORMATION

Involvement in Research Programs

Project title – short description	Start	Duration (months)	Budget (€)
"T-graph": Towards graphene-based printed devices on paper, Ajman University – University of West Attica	10/2022	6	10.000
"**Thermoskin"**: A novel self-sterillizing surface for fighting community and hospital acquired infections, GR – HFRI	10/2022	12	98.000
"SmartBIC": Smart Agriculture and Circular Bioeconomy" - MIS5047106, NSRF 2014-2020 (EPAnEK)	04/2021	26	1.787.466
"CELL4GLUE": Τ6ΥΒΠ-00341, NSRF 2014-2020 (EPAnEK)	02/2020	42	595.567
"NanoMET": Τ6ΥΒΠ-00341, NSRF 2014-2020 (EPAnEK)	02/2020	45	427.770
"**A multi parametric measurement and control system implemented on flexible substrates with printed technologies**", Stavros Niarchos Foundation	08/2017	48	46.400

Publications in Journals

1. Apostolakis, A., Barmpakos, D., Mavrikou, S., Papaionannou, G. M., Tsekouras, V., Hatziagapiou, K., ... & Kintzios, S. (2024). System for classifying antibody concentration against severe acute respiratory syndrome coronavirus 2 S1 spike antigen with automatic quick response generation for integration with health passports. Exploration of Digital Health Technologies, 2(1), 20-29.
2. Barmpakos, D., Apostolakis, A., Pilatis, A., Pagonis, D. N., & Kaltsas, G. (2023). A fully printed sensor with optical readout for real-time flow monitoring. Flexible and Printed Electronics, 8, 045011.
3. Apostolakis, A., Barmpakos, D., Pilatis, A., Belessi, V., Pagonis, D. N., Jaber, F., & Kaltsas, G. (2023). Study of Single and Multipass f–rGO Inkjet-Printed Structures with Various Concentrations: Electrical and Thermal Evaluation. Sensors, 23(4), 2058.
4. Apostolakis, A., Barmpakos, D., Pilatis, A., Patsis, G., Pagonis, D. N., Belessi, V., & Kaltsas, G. (2022). Resistivity study of inkjet-printed structures and electrical interfacing on flexible substrates. Micro and Nano Engineering, 15, 100129.
5. Barmpakos, D., Belessi, V., Xanthopoulos, N., Krontiras, C. A., & Kaltsas, G. (2022). Flexible Inkjet-Printed Heaters Utilizing Graphene-Based Inks. Sensors, 22(3), 1173.
6. Paivana, G., Barmpakos, D., Mavrikou, S., Kallergis, A., Tsakiridis, O., Kaltsas, G., & Kintzios, S. (2021). Evaluation of Cancer Cell Lines by Four-Point Probe Technique, by Impedance Measurements in Various Frequencies. Biosensors, 11(9), 345.
7. Barmpakos, D., Belessi, V., Schelwald, R., & Kaltsas, G. (2021). Evaluation of Inkjet-Printed Reduced and Functionalized Water-Dispersible Graphene Oxide and Graphene on Polymer Substrate—Application to Printed Temperature Sensors. Nanomaterials, 11(8), 2025.
8. Barmpakos, D., & Kaltsas, G. (2021). A Review on Humidity, Temperature and Strain Printed Sensors—Current Trends and Future Perspectives. Sensors, 21(3), 739.
9. K. Rubin, R. Schelwald, D. Barmpakos, A. Segkos, C. Tsamis and G. Kaltsas (2020). High-performance cost-reduced optical interferometry with True Color broadens applicability of 3D optical profiling: Advancing Flexible Electronics Devices, Materials and Fabrication Processes with precise measurements. Laser Focus World.
10. Barmpakos, D., Moschos, A., Syrovy, T., Koutsis, T., Syrova, L., & Kaltsas, G. (2020). A fully printed flexible multidirectional thermal flow sensor. Flexible and Printed Electronics, 5(3), 035005.
11. Barmpakos, D., Tsamis, C., & Kaltsas, G. (2020). Multi-parameter paper sensor fabricated by inkjet-printed silver nanoparticle ink and PEDOT: PSS. Microelectronic Engineering, 225, 111266.
12. Barmpakos, D., Famelis, I. T., Moschos, A., Marinatos, D., & Kaltsas, G. (2019). Design and Evaluation of a Multidirectional Thermal Flow Sensor on Flexible Substrate. Journal of Sensors, 2019.

Conference proceedings with review system

1. Barmpakos, D., Segkos, A., Tsamis, C., Kaltsas, G. (2019). Enhancement Of PEDOT:PSS Seebek Coefficient Using Carbon quantum-Dot-Based Nanocomposite Materials: Application to Inkjet Printing on Flexible Substrate. TRANSDUCERS 2019 Proceedings, IEEE Xplore.
2. Barmpakos, D., Segkos, A., Tsamis, C., & Kaltsas, G. (2018). A Disposable Inkjet-Printed Humidity and Temperature Sensor Fabricated on Paper. In Multidisciplinary Digital Publishing Institute Proceedings (Vol. 2, No. 13, p. 977).
3. Barmpakos, D., Segkos, A., Tsamis, C., & Kaltsas, G. (2017). A disposable flexible humidity sensor directly printed on paper for medical applications. In Journal of Physics: Conference Series (Vol. 931, No. 1, p. 012003). IOP Publishing.

International Conferences

1. Barmpakos, D., Apostolakis, A., Constantoudis, V., Zois, E., Kaltsas, G. (2024). Unique Identification of Printed Structures Through Edge Roughness Detection. *11th International Conference on Micro-Nanoelectronics, Nanotechnology and MEMS (MicroNano) 2024*. Lemnos, Greece, 11 – 13 October, 2024.

2. Apostolakis, A., Barmpakos, D., Kaltsas, G. (2024). Fully Inkjet-Printed PEDOT:PSS/ZnO Heterojunctions on a Flexible Polyamide Substrate. *11th International Conference on Micro-Nanoelectronics, Nanotechnology and MEMS (MicroNano) 2024*. Lemnos, Greece, 11 – 13 October, 2024.
3. Barmpakos, D., Apostolakis, A., Kaltsas, G. (2024). Experimental assessment of printed temperature sensors and microheaters on flexible substrates. *6th IEEE International Flexible Electronics Technology Conference*. Bologna, Italy, 15 – 18 September 4, 2024.
4. Barmpakos, D., Famelis, I. T., Moschos, A., Marinatos, D., & Kaltsas, G. (2023). Design and Evaluation of a Multidirectional Thermal Flow Sensor on Flexible Substrate. *7th International Conference on Mathematical Models & Computational Techniques in Science & Engineering*. Athens, Greece, 27 – 29 December 2023 (***invited***).
5. Barmpakos, D., Apostolakis, A., Zois, E., Kaltsas, G. (2023). Physically Unclonable Functions for unique identification of screen – printed structures, utilizing the Sparse Representation Technique. *10th International Conference on Micro-Nanoelectronics, Nanotechnology and MEMS (MicroNano) 2023*. Athens, Greece, 2 – 5 November 2023.
6. Apostolakis, A., Bampakos, D., Kaltsas, G., Theohari, S., Iakovidis, I., Poljaček, S. M. (2023). Ink-Coatings Containing TiO2 or SiO2 Nanoparticles for Screen-printing on Anodized Aluminium. *10th International Conference on Micro-Nanoelectronics, Nanotechnology and MEMS (MicroNano) 2023*. Athens, Greece, 2 – 5 November 2023.
7. Barmpakos, D., Kritikou, S., Tsakris, A., Vrioni, G., Chronis, N. (2023). A heat-activated antimicrobial microfilm for eliminating pathogen transmission in high touch surfaces. *27th International Conference on Miniaturized Systems for Chemistry and Life Sciences (μTAS) 2023.* Katowice, Poland, 15 – 19 October 2023.
8. Barmpakos, D., Apostolakis, A., Pilatis, A., Pagonis, D.-N., Kaltsas, G. (2023). A Printed Optical Flow Sensor Utilizing Thermochromic Ink. *16th International Symposium on Flexible Organic Electronics (ISFOE) 2023.* Thessaloniki, Greece, 3 – 6 July 2023.
9. Apostolakis, A., Barmpakos, D., Pilatis, A., Pagonis, D.-N., Kaltsas, G. (2022). Flexible microheaters utilizing a combination of screen printing and inkjet printing technologies. *9th International Conference on Micro-Nanoelectronics, Nanotechnology and MEMS (Micro Nano) 2022*, Xanthi, Greece, 4 – 5 November 2022.
10. Apostolakis, A., Pilatis, A., Barmpakos, D., Belessi, V., Pagonis, D.-N., Kaltsas, G. (2022). Effect of *f*-rGO ink concentration on single and multiple pass inkjet–printed structures – Resistance and temperature dependence study. *MNE – EUROSENSORS 2022,* Leuven, Belgium, 19 – 23 September 2022.
11. Barmpakos, D., Bellesi, V., Schelwald, R. & Kaltsas, G. (2021). Flexible Graphene – based inkjet – printed heaters. *Micro & Nano Engineering (MNE) 2021,* Turin, Italy, 20 – 23 September 2021.
12. Barmpakos, D., Apostolakis, A., Pilatis, A., Patsis, G., Kaltsas, G. (2021). Electrical interfacing between inkjet-printed structures and patterned copper tracks on flexible substrate. *Micro & Nano Engineering (MNE) 2021,* Turin, Italy, 20 – 23 September 2021.
13. Barmpakos, D., Tsamis, C., Kaltsas, G. (2019). Multi-parameter paper sensor fabricated by inkjet-printed silver nanoparticle and PEDOT:PSS. In *Micro & Nano Engineering (MNE) 2019,* Rhodes, Greece, 23 – 26 September 2019.
14. Barmpakos, D., Segkos, A., Tsamis, C., Kaltsas, G. (2019). Enhancement Of PEDOT:PSS Seebek Coefficient Using Carbon quantum-Dot-Based Nanocomposite Materials: Application to Inkjet Printing on Flexible Substrate. In *TRANSDUCERS 2019,* Berlin, Germany, 23 – 27 June, 2019.
15. Barmpakos, D., Segkos, A., Tsamis, C., & Kaltsas, G. (2018). A Disposable Inkjet-Printed Humidity and Temperature Sensor Fabricated on Paper. In *Eurosensors 2018*, Graz, Austria, 9–12 September 2018.

Reviewer – Editor

> 100 Peer reviews in **Springer-Nature**: Scientific Reports, Nature Communications. **Wiley**: Advanced Functional Materials, Advanced Engineering Materials, Applied Research. **IEEE**: IEEE Journal on Flexible Electronics, IEEE Sensors Letters, IEEE Access, IEEE Electron Device Letters, IEEE Sensors, IEEE Transactions on Dielectrics and Electrical Insulation. **MDPI**: Chemosensors, Micromachines, Electronics, Instruments, Energies, Sensors. **IOP**: Journal of Micromechanics and Microengineering, Flexible and Printed Electronics, Smart Materials and Structures, Engineering Research Express, Journal of The Electrochemical Society. **Hindawi**: Sensor Review. **RCS**: Nanoscale Advances. **ACS** Applied Electronic Materials

Guest Editor of *Electronics* Special Issue: "Printed Electronics: Shaping the Future of Sensors with New Design and Fabrication Methods"

Honors – Distinctions – Awards

Best Oral Award (in memory of Dr. Michael Hatzakis) in *10th International Conference on Micro-Nanoelectronics, Nanotechnology and MEMS (MicroNano) 2023,* Athens, Greece.

"**Industrial PhD Fellowship**" Program by Stavros Niarchos Foundation (PhD full scholarship).

"**The Gianna Angelopoulos Programme for Science Technology and Innovation**" scholarship for attendance of High Performance Computing Autumn School in Cambridge.

"**The Hellenic Initiative" scholarship** for attendance seminars at Ray and Maria Stata Centre at the Massachusetts Institute of Technology.

Three-year scholarship, BSc.

Scholarship for tuition fees on MSc.

1st place, 1st innovation competition (T.E.I. of Central Greece).

2nd place, 2nd innovation competition (T.E.I. of Central Greece).

A company I co-founded (Direct Solutions P.C.) was selected by Eurobank's "EGG" incubator, and MIT Enterprise Forum of Greece.

1st place, Crowdhackathon Insurtech, (analysis and multi-parametric models for driving behavior analysis).

Outstanding Reviewer Award 2019, IOP JMM.

Outstanding Reviewer Award 2020, IOP FPE.

Trusted Reviewer Status, IOP.