Curriculum Vitae

Panagiotis Bousoulas

Applied Physicist

PERSONAL INFORMATION

Home Address:	108, Stratigou. Makrigianni Str., Mosxato, Athens, 18345, Attica, Greece
Tel:	+302107721679, mobile:+306974082994
e-mail:	panbousoulas@gmail.com, panbous@mail.ntua.gr
Date of Birth:	24th July 1987
Nationality:	Greek

EDUCATION

07/2012 – 09/2017 **National Technical University of Athens (NTUA)**
Dissertation funded by School of Applied Mathematics and Physical Sciences (SAMPS)
PhD Thesis: "Nanoelectronic Memory Devices".
Supervisor Professor: Dimitris Tsoukalas.

10/2010 – 06/2012 **NTUA-Interdisciplinary Postgraduate Program "Microsystems and Nanodevices"**
Coordinating School: SAMPS
Collaborating Schools: School of Electrical and Computer Engineering (SECE), School of Mechanical Engineering, School of Chemical Engineering, School of Mining and Metallurgical Engineering
Collaborating Institutes: Institute Nanoscience and Nanotechnology (INN), National Center for Scientific Research (NCSR) "Demokritos"
Master of SAMPS - NTUA
Master *Grade:* 9.1/10 (90 ECTS).
Specialization: Physics and technology of low dimension devices, clean room processes, sensors, memory devices, simulation procedures.
Diploma Thesis: "Fabrication, characterization and effect of radiation on non-volatile memory devices, containing metal and semiconductor nanocrystals".
Supervisor Professor: Dimitris Tsoukalas.

10/2005 – 10/2010 **Diploma of SAMPS - NTUA**. 5-year studies equivalent to Master.
Grade: 8.1/10 (300 ECTS).
Specialization: Nuclear Physics, Signal Processing, Optoelectronics and Lasers, Physics of Materials and Electronic Devices, Technology of Microsystems and Nanotechnology.
Diploma Thesis: "Charge Transport Phenomena in Nanoparticle Arrays".
Supervisor Professor: Dimitris Tsoukalas.

09/2002 – 09/2005 **General Lyceum Graduation** (*Grade*: 17.7/20). Lyceum of Kyparissia.

WORK EXPERIENCE

10/2018 – present **Postdoctoral Researcher**
National Technical University of Athens (NTUA)
Research Projects: INNOVATION-EL, DIAMOND, MICSYS, "Researches" support with an emphasis on young researches – 2nd Cycle
Laboratory of Advanced Materials and Micro/Nano Devices
Electronic Nanomaterials and Devices Group

05/2018 – 09/2018 **Project Assistant – Junior IT Consultant**

European Dynamics
209, Kifissias Av., 15124, Marousi, Athens, Greece
International Business Development (IBD) Department
Roles and Responsibilities:

- assisting the development of relations with customers and partnerships with other companies internationally;
- participating in the preparation of technical bids;
- preparing technical documents, tenders and marketing material;
- participation in project management related tasks, reporting and requirements engineering of IT projects.

09/2017 – 05/2018 **Military Service (Greek Army – Hellenic Army Aviation)**

11/2015 – 08/2017 **Coordinating School: SAMPS**
Collaborating Institutes: INN, NCSR "Demokritos"
Principal Scientist at IKY-SIEMENS Scholarship entitled "Electronic Devices with Tunable Resistance Levels Controlled by Metallic Nanoparticles"
Responsibilities: Fabrication of Resistive Random Access Memory (RRAM) devices as well as electrical, optical and structural study of the deposited thin films and nanoparticles arrays. Monte-Carlo and finite element simulations were also carried out.

01/2013 – 10/2015 **Coordinating School: SAMPS**
Collaborating Institutes: INN, NCSR "Demokritos"
Principal Scientist at project entitled "Nanoparticle Assemblies for Resistive Memories"
Responsibilities: Integration of metal oxide nanoparticles in crossbar architectures as well as in novel device structures. Realization of several microscopy techniques and simulation procedures.

03/2012 – 12/2012 **Coordinating Company: Microsystems for Molecular Diagnostics (MICRO2GEN)**
Collaborating Schools: School of Physics, Faculty of Sciences of the Aristotle University Thessaloniki, School of Electrical and Computer Engineering of the University of Patras, SAMPS of the NTUA, SECE of the NTUA, Department of Informatics Engineering of the Technological Educational Institute of Crete
Collaborating Institutes: INN of the NCSR "Demokritos"
Collaborating Companies: INTRACOM, Alma Technologies, 4Plus, Raymetrics Lidar Systems
Participation in as a member of SAMPS team at project entitled "LABONCHIP: Lab-On-Chip Based on Molecular Diagnosis for Genetic and Environmental Applications"
Responsibilities: Deposition of ultra-small Au nanoparticles on sensor arrays and evaluation of the sensing yield towards DNA molecules, humidity and gases.

11/2011 – 02/2012 **Coordinating Organization: European Space Agency (ESA)**
Collaborating Schools: SECE of the NTUA
Collaborating Institutes: INN, NCSR "Demokritos", Institute of Nuclear and Particle Physics of the NCSR "Demokritos"
Collaborating Companies: Numonyx
Participation in as a member of SAMPS team at project entitled "Demonstration of Radiation Hard Electronic Non-Volatile Memories"
Responsibilities: Fabrication of memory devices, electrical characterization and before and after the irradiation with protons, heavy ions and gamma-rays.

01/2011 – 09/2017 **Teaching Assistant at undergraduate and postgraduate laboratories**
Clean Room Processes Lab
Electrical Characterization Lab
SEM and AFM Lab
XRD Lab
Telemetry lab in conjunction with MIT Microelectronic Device Characterization iLab Client
Simulation Lab
Supervisor of total 20 undergraduate and postgraduate students during their thesis, Reviewer of several Journals (ACS, IOP, Wiley, Springer, Elsevier, IEEE)

09/2010 – 11/2010 **Internship at "Forth Photonics"**
19-21, Theofanous Str., 11523, Athens, Greece
Electrical and Quality Assurance Engineer
Roles and Responsibilities: Working on DySIS (Dynamic Spectral Imaging System), a device for diagnosis of early stage cervical cancer

FOREIGN LANGUAGES

English: Excellent knowledge - both verbal and written (B2, First Certificate in English, University of Cambridge - 2002, C2, Proficiency of Michigan – ECPE, 2014).

German: Excellent knowledge - both verbal and written (C1, Goethe Institute, 2020).

COMPUTER SKILLS

- OSs: Microsoft Windows, Linux;
- Applications: Microsoft Office, Microsoft Excel, Microsoft PowerPoint OpenOffice;
- Programming Skills: Pascal, C, Python, Java, VBA;
- IDEs: Matlab, Simulink, Mathematica, COMSOL Multiphysics, Lab-View.

OTHER SKILLS

Communication skills Excellent communication skills gained through my collaboration with professionals from different business sectors, as well as during my involvement in several national and European research projects

Organizational / managerial skills Excellent organizational, multi-tasking and time management skills gained through my participation in several projects, Excellent team management skills gained through my experience in supporting the project team so as to carry out specific tasks and activities, Very good training skills gained through my experience as teaching assistant

Job-related Skills Decision making and problem solving skills developed through my involvement in projects faced important funding delays, Well trained and familiar with clean room fabrication processes (thin films and nanoparticles growth through PVD methods, optical and e-beam lithography, etching, ALD depositions), Fabrication and characterization (optical, chemical, structural and electrical) of sensor and memory devices, Experience in using lab equipment for material characterization (SEM, AFM, C-AFM, XRD)

Driving License Category B

RESEARCH PROJECTS

2010 – 2012 Project entitled "Demonstration of Radiation Hard Electronic Non-Volatile Memories" funded by ESA

2009 – 2013	Project entitled "LABONCHIP: Lab-On-Chip based on molecular diagnosis for genetic and environmental applications", funded by General Secretariat for Research and Technology (NSRF)
2013 – 2015	Project entitled "NANOARM: Nanoparticles assemblies for resistive memories-ARISTEIA II" funded by NSRF
2018 – 2021	Project entitled "National Infrastructure for Nanotechnology, Advanced Materials and Micro-Nano Electronics" funded by the Operational Programme "Competitiveness, Entrepreneurship and Innovation" (NSRF 2014-2020)
2018 – 2021	Project entitled "DIAMOND" funded by NSRF 2014-2020
2020 – 2021	Project entitled 'Electronic switching resistance memories made from SiO_x and metallic nanoparticles for neuromorphic applications' (MIS 5049432) under the call for proposals 'Researchers' support with an emphasis on young researchers—2nd Cycle'.
2020 – 2023	Project entitled "MICSYS" funded by NSRF 2014-2020

SCHOLARSHIPS/AWARDS

09/2008 – 09/2009	Undergraduate Studies Scholarship, National Scholarship Foundation of Greece (IKY).
11/2015 – 08/2017	IKY-SIEMENS Scholarship during my PhD: "Electronic devices with tunable resistance levels controlled by metallic nanoparticles"
09/2018	Dimitris N. Chorafas Foundation Award 2018, Weizmann Institute of Science
11/2018	Thomaidio Award from NTUA for exceptional published article

PUBLICATIONS/CONFERENCES

- 31 articles in international peer-reviewed journals, 12 conference proceedings papers (peer-reviewed) and 1 book chapter;
- 39 conference announcements, 3 of them invited, member of the local organizing committee in one conference (Micro and Nano 2015).

INTERESTS

- *Basketball:* Member of local Basketball team;
- *Dancing:* Member of local dance group of Greek traditional music;
- *Swimming and Cross-training.*

REFERENCES

- Professor Dimitris Tsoukalas, NTUA, Department of Applied Physics, Zografou Campus, 15780, Athens, Greece, e-mail: dtsouk@mail.ntua.gr, http://www.physics.ntua.gr/~tsoukalas/index.html
- Professor Yannis Raptis, NTUA, Department of Applied Physics, Zografou Campus, 15780, Athens, Greece, e-mail: yraptis@mail.ntua.gr, http://users.ntua.gr/yraptis/home
- Assistant Professor Ioanna Zergioti, NTUA, Department of Applied Physics, Zografou Campus, 15780, Athens, Greece, e-mail: zergioti@mail.ntua.gr, http://zergioti.physics.ntua.gr/
- Researcher A Pascal Normand, INN, NCSR "Demokritos", Aghia Paraskevi, 15310 Athens, Greece, e-mail: p.normand@inn.demokritos.gr, https://inn.demokritos.gr/prosopiko/p.normand/

ANNEX

- A detailed list of the publications titles and conference presentations is provided.

PUBLICATIONS

2022

- Ch. Tsioustas, P. Bousoulas, J. Hadfield, T. P. Chatzinikolaou, I.-A. Fyrigos, V. Ntinas, M.-A. Tsompanas, G. Ch. Sirakoulis, D. Tsoukalas, "Simulation of Low Power Self-Selective Memristive Neural Networks for in Situ Digital and Analogue Artificial Neural Network Applications", **IEEE Transactions on Nanotechnology, 9, 12, (2022).**
- Ch. Papakonstantinopoulos, **P. Bousoulas**, E. Aslanidis, E. Skotadis, M. Tsigkourakos, D. Tsoukalas, "Highly sensitive stretchable sensor combined with low-power memristor for artificial mechanoreceptor properties demonstration", **Flexible and Printed Electronics, 8, 11, (2022).**
- **P. Bousoulas**, Ch. Tsioustas, D. Tsoukalas, "Emulating low power nociceptive functionalities with a forming-free SiO_2/VO_x conductive bridge memory with Pt nanoparticles", **Applied Physics Letters 120, 253509, (2022).**
- **P. Bousoulas**, S. Kitsios, T. P. Chatzinikolaou, I.-A. Fyrigos, V. Ntinas, S. Kitsios, M.-A. Tsompanas, G. Ch. Sirakoulis, D. Tsoukalas, "Material design strategies for emulating neuromorphic functionalities with resistive switching memories", **Japanese Journal of Applied Physics, 6, (2022).**
- T. Chatzinikolaou, I.-A. Fyrigos, V. Ntinas, S. Kitsios, M.-A. Tsompanas **P. Bousoulas**, D. Tsoukalas, A. Adamatzky, G. Ch. Sirakoulis, "Chemical Wave Computing from Labware to Electrical Systems", **Electronics, 11, 1683, (2022).**
- S. Kitsios, **P. Bousoulas**, D. Spithouris, M. Kainourgiaki, M. Tsigkourakos, P. Chatzopoulou, G. P. Dimitrakopulos, P. Komninou, D. Tsoukalas, "Demonstration of Enhanced Switching Variability and Conductance Quantization Properties in a SiO_2 Conducting Bridge Resistive Memory with Embedded Two-Dimensional MoS2 Material", **ACS Applied Electronic Materials 4, 2869–2878, (2022).**
- **P. Bousoulas**, C. Tsioustas, J. Hadfield, V. Aslanidis, S. Limberopoulos, D. Tsoukalas, "Low Power Stochastic Neurons From SiO_2-Based Bilayer Conductive Bridge Memristors for Probabilistic Spiking Neural Network Applications—Part II: Modeling", **IEEE Transactions on Electron Devices, 69, 2368-2376, (2022)**.
- **P. Bousoulas**, C. Tsioustas, J. Hadfield, V. Aslanidis, S. Limberopoulos, D. Tsoukalas, "Low Power Stochastic Neurons From SiO2-Based Bilayer Conductive Bridge Memristors for Probabilistic Spiking Neural Network Applications—Part I: Experimental Characterization", **IEEE Transactions on Electron Devices, 69, 2360-2367, (2022).**
- T. Chatzinikolaou, I.-A. Fyrigos, V. Ntinas, S. Kitsios, P. Bousoulas, M.-A. Tsompanas, D. Tsoukalas, A. Adamatzky, G. Ch. Sirakoulis, "Memristor-based Oscillator for Complex Chemical Wave Logic Computations: Fredkin Gate Paradigm", **Proceedings of LASCAS, 1-4, (2022).**

2021

- T. Chatzinikolaou, I.-A. Fyrigos, V. Ntinas, S. Kitsios, **P. Bousoulas**, M.-A. Tsompanas, D. Tsoukalas, A. Adamatzky, G. Ch. Sirakoulis, "Margolus Chemical Wave Logic Gate with Memristive Oscillatory Networks", **Proceedings of ICECS, 1-6, (2021)**.
- T. Chatzinikolaou, I.-A. Fyrigos, V. Ntinas, S. Kitsios, **P. Bousoulas**, M.-A. Tsompanas, D. Tsoukalas, G. Ch. Sirakoulis, "Unconventional Logic on Memristor-Based Oscillatory Medium", **Proceedings of MOCAST, 1-4, (2021).**
- T. Chatzinikolaou, I.-A. Fyrigos, V. Ntinas, S. Kitsios, **P. Bousoulas**, M.-A. Tsompanas, D. Tsoukalas, G. Ch. Sirakoulis, "Multifunctional Spatially-Expanded Logic Gate for Unconventional Computations with Memristor-Based Oscillators", **Proceedings of CNNA, 1-5, (2021).**

- T. Chatzinikolaou, I.-A. Fyrigos, V. Ntinas, S. Kitsios, **P. Bousoulas**, M.-A. Tsompanas, D. Tsoukalas, G. Ch. Sirakoulis, "Memristive Oscillatory Networks for Computing: The Chemical Wave Propagation Paradigm", **Proceedings of CNNA, 1-5, (2021).**
- **P. Bousoulas,** C. Papakonstantinopoulos, D. Tsoukalas, "Emulating artificial mechanoreceptor functionalities from SiO_2-based memristor and PDMS stretchable sensor for artificial skin applications", **Proceedings of ESSDREC, 91-94, (2021).**
- C. Papakonstantinopoulos, **P. Bousoulas,** M. Tsigkourakos, D. Sakellaropoulos, L. Syggelou, D. Tsoukalas, "Highly Flexible Artificial Synapses from SiO_2-Based Conductive Bridge Memristors and Pt Nanoparticles through a Crack Suppression Technique", **ACS Applied Electronic Materials 6, 2729–2737, (2021).**
- **P. Bousoulas**, D. Sakellaropoulos, D. Tsoukalas, "Tuning the analog synaptic properties of forming free SiO_2 memristors by material engineering", **Applied Physics Letters 118, 143502, (2021).**
- **P. Bousoulas**, M. Panagopoulou, N. Boukos, D. Tsoukalas, "Emulating artificial neuron and synaptic properties with SiO_2-based memristive devices by tuning threshold and bipolar switching effects", **Journal of Physics D: Applied Physics 54, 225303, (2021).**
- **P. Bousoulas**, C. Papakonstantinopoulos, S. Kitsios, K. Moustakas, G. Sirakoulis, D. Tsoukalas, "Emulating Artificial Synaptic Plasticity Characteristics from SiO_2-Based Conductive Bridge Memories with Pt Nanoparticles", **Micromachines 12, 306, (2021).**
- D. Sakellaropoulos, **P. Bousoulas**, C. Papakonstantinopoulos, S. Kitsios, D. Tsoukalas, "Impact of Active Electrode on the Synaptic Properties of SiO_2-Based Forming-Free Conductive Bridge Memory", **IEEE Transactions on Electron Devices, 68, 1598-1603, (2021).**

2020

- **P. Bousoulas**, D. Sakellaropoulos, C. Papakonstantinopoulos, S. Kitsios, C. Arvanitis, E. Bagakis, D. Tsoukalas, "Investigating the origins of ultra-short relaxation times of silver filaments in forming-free SiO_2-based conductive bridge memristors", **Nanotechnology 31, 454002, (2020).**
- D. Sakellaropoulos, **P. Bousoulas**, C. Papakonstantinopoulos, S. Kitsios, D. Tsoukalas, "Spatial confinement effects of embedded nanocrystals on multibit and synaptic properties of forming free SiO_2-based Conductive Bridge Random Access Memory", **IEEE Electron Device Letters 41, 1013–1016, (2020).**
- D. Sakellaropoulos, **P. Bousoulas**, G. Nikas, C. Arvanitis, E. Bagakis, D. Tsoukalas, "Enhancing the synaptic properties of low-power and forming-free $HfO_x/TaO_y/HfO_x$ resistive switching devices", **Microelectronic Engineering 229, 111358, (2020).**

2019

- D. Sakellaropoulos, **P. Bousoulas**, D. Tsoukalas, "Impact of Pt embedded nanocrystals on the resistive switching and synaptic properties of forming free TiO_{2-x}/TiO_{2-y}-based bilayer structures", **J. Appl. Phys. 126, 044501, (2019).**

2017

- **P. Bousoulas,** I. Karageorgiou, V. Aslanidis, K. Giannakopoulos, D. Tsoukalas, "Tuning Resistive, Capacitive, and Synaptic Properties of Forming Free TiO_{2-x} Based RRAM Devices by Embedded Pt and Ta Nanocrystals", **Wiley Physica Status Solidi A, 1700440, (2017).**
- M. Tsigkourakos, **P. Bousoulas,** V. Aslanidis, V. Skotadis, D. Tsoukalas, "Ultra-Low Power Multilevel Switching with Enhanced Uniformity in Forming Free TiO_{2-x}-Based RRAM with Embedded Pt Nanocrystals", **Wiley Physica Status Solidi A, 1700570, (2017).**

- **P. Bousoulas,** I. Michelakaki, V. Skotadis, M. Tsigkourakos, D. Tsoukalas, "Low-Power Forming Free $TiO_{2-x}/HfO_{2-y}/TiO_{2-x}$-Trilayer RRAM Devices Exhibiting Synaptic Property Characteristics", **IEEE Transactions on Electron Devices, 64, 3151-3158, (2017).**
- **P. Bousoulas,** I. Giannopoulos, P. Asenov, I. Karageorgiou, D. Tsoukalas, "Experiments and simulation of multilevel resistive switching in forming free Ti/TiO_{2-x} RRAM devices", **Proceedings of EUROSOI, 2472, (2017).**
- **P. Bousoulas,** I. Giannopoulos, P. Asenov, I. Karageorgiou, D. Tsoukalas, "Investigating the origins of high multilevel resistive switching in forming free Ti/TiO_{2-x} -based memory devices through experiments and simulations", **J. Appl. Phys. 121, 094501, (2017).**

2016

- I. Michelakaki, **P. Bousoulas,** N. Maragos, N. Boukos, D. Tsoukalas, "Resistive memory multilayer structure with self-rectifying and forming free properties along with their modification by adding a hafnium nanoparticle midlayer", **Journal of Vacuum Science & Technology A Vacuum Surfaces and Films 35, 021501, (2016).**
- I. Michelakaki, **P. Bousoulas,** S. Stathopoulos, D. Tsoukalas, "Coexistence of bipolar and threshold resistive switching in TiO_2 based structure with embedded hafnium nanoparticles", **Journal of Physics D, Applied Physics 50, 045103**, **(2016).**
- **P. Bousoulas,** P. Asenov, I. Karageorgiou, D. Sakellaropoulos, S. Stathopoulos, D. Tsoukalas, "Engineering amorphous-crystalline interfaces in TiO_{2-x}/TiO_{2-y}-based bilayer structures for enhanced resistive switching and synaptic properties", **J. Appl. Phys. 120**, **154501**, (**2016).**
- **P. Bousoulas,** P. Asenov, D. Tsoukalas, "Physical modelling of the SET/RESET characteristics and analog properties of $TiO_x/HfO_{2-x}/TiO_x$-based RRAM devices", **Proceedings of SISPAD, 1946, (2016).**
- **P. Bousoulas,** D. Tsoukalas, "Understanding the SET/RESET Characteristics of Forming Free TiO_x/TiO_{2-x} Resistive-Switching Bilayer Structures through Experiments and Modeling", **Chapter 12 in book: Advanced Engineering Materials and Modeling, pp. 369-405, (2016).**
- **P. Bousoulas,** S. Stathopoulos, D. Tsialoukis, D. Tsoukalas, "Low-Power and Highly Uniform 3-b Multilevel Switching in Forming Free TiO_{2-x}-Based RRAM With Embedded Pt Nanocrystals", **IEEE Electron Device Letters 37**, **874–877, (2016).**
- **P. Bousoulas**, D. Tsoukalas, "Understanding the Formation of Conducting Filaments in RRAM Through the Design of Experiments", **International Journal of High Speed Electronics and Systems 25, 1640007**, **(2016).**
- E. Skotadis, G. Tsekenis, M. Chatzipetrou, L. Patsiouras, L. Madianos, **P. Bousoulas,** I. Zergioti, D. Tsoukalas, "Heavy metal ion detection using DNAzyme-modified platinum nanoparticle networks", **Sensors and Actuators B Chemical 239, 962-969, (2016).**

2015

- **P. Bousoulas,** J. Giannopoulos, K. Giannakopoulos, P. Dimitrakis, D. Tsoukalas, "Memory programming of TiO_{2-x} films by Conductive Atomic Force Microscopy evidencing filamentary resistive switching", **Appl. Surface Science 332, 55-61 (2015).**
- K. Giannakopoulos, J. Giannopoulos, **P. Bousoulas,** E. Verrelli, D. Tsoukalas, "Structural characterization of layers for advanced non-volatile memories", **Springer Proceedings in Physics 164, 9-17, (2015).**
- **P. Bousoulas,** D. Sakellaropoulos, J. Giannopoulos, D. Tsoukalas, "Improving the resistive switching uniformity of forming-free TiO_{2-x} based devices by embedded Pt nanocrystals", **Proceedings of ESSDREC, 274-277, (2015).**

- **P. Bousoulas,** I. Michelakaki, J. Giannopoulos, K. Giannakopoulos, and D. Tsoukalas, "Material and Device Parameters Influencing Multi-Level Resistive Switching of Room Temperature Grown Titanium Oxide Layers", **MRS Proceedings vol. 1729**, (**2015**).

2014

- **P. Bousoulas,** I. Michelakaki, D. Tsoukalas, "Influence of oxygen content of room temperature TiO_{2-x} deposited films for enhanced resistive switching memory performance", **J. Appl. Phys. 115, 034516 (2014).**
- **P. Bousoulas,** I. Michelakaki, D. Tsoukalas, "Influence of Ti top electrode thickness on the resistive switching properties of forming free and self-rectified TiO_{2-x} thin films, **Thin Solid Films 51, 23-31 (2014).**

CONFERENCES

2022

- T. Chatzinikolaou, I.-A. Fyrigos, V. Ntinas, S. Kitsios, P. Bousoulas, M.-A. Tsompanas, D. Tsoukalas, A. Adamatzky, G. Ch. Sirakoulis, "Memristor-based Oscillator for Complex Chemical Wave Logic Computations: Fredkin Gate Paradigm", **LASCAS, (2022) – Oral Presentation**
- S. Kitsios, **P. Bousoulas**, D. Spithouris, D. Tsoukalas, "Demonstration of Enhanced Switching Variability and Conductance Quantization Properties in a SiO2 Conducting Bridge Resistive Memory with Embedded Two-Dimensional MoS2 Material", **MNE, (2022) – Poster Presentation**
- T. Chatzinikolaou, I.-A. Fyrigos, S. Kitsios, **P. Bousoulas**, M.-A. Tsompanas, D. Tsoukalas, G. Ch. Sirakoulis, "Unconventional Logic on Unipolar CBRAM based Oscillators", **NANO, (2022) – Oral Presentation**
- T. Chatzinikolaou, I.-A. Fyrigos, V. Ntinas, S. Kitsios, **P. Bousoulas**, M.-A. Tsompanas, D. Tsoukalas, A. Adamatzky, G. Ch. Sirakoulis, "Compact Thermo-Diffusion Based Physical Memristor Model", **ISCAS, (2022) – Oral Presentation**
- T. Chatzinikolaou, I.-A. Fyrigos, V. Ntinas, S. Kitsios, **P. Bousoulas**, M.-A. Tsompanas, D. Tsoukalas, A. Adamatzky, G. Ch. Sirakoulis, "Wave Cellular Automata for Computing Applications", **ISCAS, (2022) – Oral Presentation**

2021

- T. Chatzinikolaou, I.-A. Fyrigos, V. Ntinas, S. Kitsios, **P. Bousoulas**, M.-A. Tsompanas, D. Tsoukalas, A. Adamatzky, G. Ch. Sirakoulis, "Margolus Chemical Wave Logic Gate with Memristive Oscillatory Networks", **ICECS, (2021) – Oral Presentation**
- S. Kitsios, **P. Bousoulas,** M. Kainourgiaki, M. Tsigourakis, D. Tsoukalas, "Quantized Conductance Properties in SiO_2-based Conductive Bridge Random Access Memory with embedded MoS_2", **XXXV Panhellenic Conference on Solid-State Physics, (2021) – Poster Presentation**
- C. Papakonstantinopoulos, **P. Bousoulas**, D. Tsoukalas, "Demonstration of strain sensors with memory effect", **XXXV Panhellenic Conference on Solid-State Physics, (2021) – Oral Presentation**
- T. Chatzinikolaou, I.-A. Fyrigos, V. Ntinas, S. Kitsios, **P. Bousoulas**, M.-A. Tsompanas, D. Tsoukalas, G. Ch. Sirakoulis, "Unconventional Logic on Memristor-Based Oscillatory Medium", **MOCAST, (2021) – Oral Presentation**
- T. Chatzinikolaou, I.-A. Fyrigos, V. Ntinas, S. Kitsios, **P. Bousoulas**, M.-A. Tsompanas, D. Tsoukalas, G. Ch. Sirakoulis, "Multifunctional Spatially-Expanded Logic Gate for Unconventional Computations with Memristor-Based Oscillators", **CNNA, (2021) – Oral Presentation**
- T. Chatzinikolaou, I.-A. Fyrigos, V. Ntinas, S. Kitsios, **P. Bousoulas**, M.-A. Tsompanas, D. Tsoukalas, G. Ch. Sirakoulis, "Memristive Oscillatory Networks for

- Computing: The Chemical Wave Propagation Paradigm", **CNNA, (2021) – Oral Presentation**
- C. Papakonstantinopoulos, **P. Bousoulas,** D. Tsoukalas, "Artificial synaptic devices based on SiO_2 and a Pt nanoparticle layer to suppress crack formation on flexible substrates", **MNE, (2021) – Poster Presentation.**
- **P. Bousoulas**, M. Panagopoulou, N. Boukos, D. Tsoukalas, "Enhancing the analog synaptic properties of forming free SiO2 memristors by a materials engineering approach", **AIP Publishing, Materials Challenges for Memory**, **(2021) - Poster Presentation.**
- **P. Bousoulas,** C. Papakonstantinopoulos, D. Tsoukalas, "Emulating artificial mechanoreceptor functionalities from SiO_2-based memristor and PDMS stretchable sensor for artificial skin applications", **Proceedings of ESSDREC, (2021) – Oral Presentation**

2019

- D. Sakellaropoulos, **P. Bousoulas,** D. Tsoukalas, Tuning of resistive switching and synaptic properties by embedding Pt nanocrystals in TiO_x bilayer devices, **EUROMAT (2019) – Oral Presentation**
- **P. Bousoulas,** D. Sakellaropoulos, D. Tsoukalas, Demonstration of ultra-low power $TiO_{2-x}/Ta_2O_{5-y}/TiO_{2-x}$-based RRAM devices with synaptic properties, **EUROMAT (2019) – Poster Presentation**
- D. Sakellaropoulos, P. Bousoulas, G. Nikas, D. Tsoukalas, Synaptic properties of HfO_x and TaO_y-based resistive switching multilayer devices, **MNE (2019) – Poster Presentation**

2018

- D. Sakellaropoulos, **P. Bousoulas,** D. Tsoukalas, "Influence of embedded nanoparticles on resistive switching properties of bilayer metal oxide structures", **Micro and Nano, (2018) – Poster Presentation**

2017

- H. Kanouta, X. Aslanoglou, C. Dimitriadi, M. Axiotis, A. Lagoyannis, **P. Bousoulas,** D. Tsoukalas, "Thin film profile measurements with RBS", **Hellenic Nuclear Physics Society (2017) – Poster Presentation**
- M. Tsigkourakos, **P. Bousoulas,** V. Aslanidis, P. Asenov, D. Tsoukalas, "Demonstration of ultra-low power multilevel switching with enhanced uniformity in forming free TiO_{2-x}-based RRAM with embedded Pt nanocrystals", **EUROMAT (2017) – Poster Presentation**
- **P. Bousoulas,** I. Karageorgiou, V. Aslanidis, K. Giannakopoulos, D. Tsoukalas, "Tailoring resistive, capacitive and synaptic properties of forming free TiO_{2-x}-based RRAM devices by embedded Pt and Ta nanocrystals", **EMRS-Spring Meeting, (2017) – Oral Presentation**
- **P. Bousoulas,** D. Tsoukalas, "Demonstration of low power $TiO_{2-x}/HfO_{2-y}/TiO_{2-x}$-based RRAM devices with synaptic properties", **MEMRISYS (2017) – Oral Presentation**
- **P. Bousoulas,** I. Giannopoulos, P. Asenov, I. Karageorgiou, D. Tsoukalas, "Experiments and simulation of multilevel resistive switching in forming free Ti/TiO_{2-x} RRAM devices", **EUROSOI (2017) – Poster Presentation**

2016

- **P. Bousoulas,** P. Asenov, D. Tsoukalas, "Physical modelling of the SET/RESET characteristics and analog properties of $TiO_x/HfO_{2-x}/TiO_x$-based RRAM devices", **SISPAD (2016) – Poster Presentation**
- E. Skotadis, G. Tsekenis, M. Chatzipetrou, L. Patsiouras, L. Madianos, **P. Bousoulas,** I. Zergioti, D. Tsoukalas, "Environmental monitoring using dnazyme-modified platinum nanoparticle networks", **MNE (2016) – Poster Presentation**

2015

- D. Tsoukalas, **P. Bousoulas,** "Understanding the Formation of Conducting Filaments in RRAM Through the Design of Experiments and Simulations", 9th Workshop on Frontiers in Electronics **(WOFE) (2015) – Oral Presentation - Invited**
- **P. Bousoulas,** D. Sakellaropoulos, J. Giannopoulos, D. Tsoukalas, "Impact of Pt nanocrystals density and size on the resistive switching properties of forming free TiO_{2-x} based devices", **International Workshop-Advances in RRAM, (2015) – Oral Presentation**
- **P. Bousoulas,** D. Sakellaropoulos, J. Giannopoulos, D. Tsoukalas, "Improving the resistive switching uniformity of forming-free TiO_{2-x} based devices by embedded Pt nanocrystals", **ESSDREC, (2015) – Oral Presentation**
- **P. Bousoulas,** P. Asenov, D. Sakellaropoulos, I. Karageorgiou, D. Tsoukalas, "Tuning the resistive switching properties of forming free TiO_{2-x} memory devices by embedded Pt and Ta nanocrystals", **Micro and Nano, (2015) – Oral Presentation**
- E. Verrelli, **P. Bousoulas,** N. Boukos, D. Tsoukalas, "High Density sub-2 nm gold nanoparticles with tunable nearest neighbor distance for non-volatile memory applications", **EMRS-Spring Meeting, (2015) – Oral Presentation**
- **P. Bousoulas,** D. Sakellaropoulos, I. Karageorgiou, D. Tsoukalas, "Investigating materials processing in TiO_{2-x} based structures for improved resistance switching uniformity", **EMRS-Spring Meeting, (2015) – Poster Presentation**
- **P. Bousoulas,** I. Giannopoulos, P. Asenov, I. Karageorgiou, D. Tsoukalas, "Modelling the multilevel resistive switching behavior of forming free TiO_{2-x} memory devices", **XXXI Panhellenic Conference on Solid-State Physics, (2015) – Poster Presentation**
- **P. Bousoulas,** I. Giannopoulos, P. Asenov, I. Karageorgiou, D. Tsoukalas, "Understanding the origins of high multilevel resistive switching in forming free TiO_{2-x} based memory devices", **Micro and Nano, (2015) – Poster Presentation**

2014

- **P. Bousoulas,** I. Michelakaki, D. Tsoukalas, "Influence of Ti top electrode thickness on the resistive switching properties of forming free and self-rectified TiO_{2-x} thin films", **TCM (2014) – Poster Presentation**
- K. Giannakopoulos, J. Giannopoulos, **P. Bousoulas,** E. Verrelli, D. Tsoukalas, "Structural characterization of layers for advanced non-volatile memories", **INTERM (2014) – Oral Presentation - Invited**
- **P. Bousoulas,** I. Giannopoulos, K. Giannakopoulos, P. Dimitrakis, D. Tsoukalas, "Monitoring TiO_{2-x} resistive switching by Conductive Atomic Force Microscopy", **EMRS-Spring Meeting, (2014) – Poster Presentation**
- **P. Bousoulas,** I. Michelakaki, D. Tsoukalas, "Effect of oxygen content on resistive switching properties of room temperature deposited TiO_{2-x} films", **EMRS-Spring Meeting, (2014) – Poster Presentation**
- D. Tsoukalas, E. Verrelli, **P. Bousoulas,** N. Boukos, "High density Au nanoclusters for highly efficient non-volatile memories", **MRS-Fall Meeting, (2014) – Oral Presentation**
- **P. Bousoulas,** I. Michelakaki, J. Giannopoulos, K. Giannakopoulos, and D. Tsoukalas, "Material and Device Parameters Influencing Multi-Level Resistive Switching of Room Temperature Grown Titanium Oxide Layers", **MRS-Fall Meeting, (2014) – Oral Presentation**

2013

- D. Tsoukalas, E. Verrelli, **P. Bousoulas,** "Metal and metal oxide nanoparticles for emerging memories", **International Semiconductor Device Research Symposium, (2013) – Oral Presentation – Invited**

- **P. Bousoulas,** E. Verrelli, D. Tsoukalas, "Fabrication and Characterization of MOS Memory Devices Containing Pt Nanocrystals" **XXIX Panhellenic Conference on Solid-State Physics, (2013) – Poster Presentation**

2010

- 4th International Conference **Micro & Nano** on Microelectronics, Nanoelectronics & MEMS, NCSR "Demokritos", **MSc Student Participation**, **Athens, (2010)**