



Eleni Makarona

Senior Researcher
Optical Biosensors Group

Profile

Eleni is a Senior Researcher of the Optical Biosensors Group, Institute of Nanoscience and Nanotechnology, NCSR "Demokritos". Her main research focus is on the design and development of photonic sensors for the biodiagnostics and food safety sectors. During the past few years she has extended her research activities to include the study, creation and application of metal oxide nanostructures and nanoarchitectures.

Education

- 2000-2004 ● Physics Department, Brown University
PhD in Physics
PhD Thesis: "*AllnGaN-based Ultra-violet Light Emitting Diodes: Microscopic Physics of Device Operation*"
- 1998-2000 ● Physics Department, Brown University
MSc in Physics
- 1993-1998 ● Physics Department, National and Kapodistrian University of Athens
BSc in Physics
BSc Thesis: "*Transient Electrical Signals during the compression of γ -irradiated LiF crystals*"

Professional Experience

- 2018-today ● *Senior Researcher*
Institute of Nanoscience and Nanotechnology, NCSR "Demokritos"
- 2014-2018 ● *Adjunct Researcher*
Institute of Nanoscience and Nanotechnology, NCSR "Demokritos"
- 2009-2014 ● *Research Associate*
Institute of Nanoscience and Nanotechnology, NCSR "Demokritos"
- 2005-2009 ● ¹*Post-doctoral Researcher (Researcher D')*
Institute of Microelectronics, NCSR "Demokritos"

Contact



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Institute of Nanoscience and
Nanotechnology,
NCSR "Demokritos"

- 2009-2013 ● *Teaching Associate*
 Electronics Department and General Department,
 Technical University of Piraeus (now part of the
 University of West Attica), Greece – teaching laboratory
 courses (Transmission Lines, Physics I and Physics II)
- Spring 2005 ● *Professor of Physics II (Electromagnetism)*
 University of Athens (private college), Greece
- 1999-2004 ● *Post-graduate Research Assistant*
 Physics Department, Brown University, USA (Dr
 Makarona throughout her PhD candidature under the
 supervision of Professor A. Nurmikko was supported
 through Research Assistantships secured by projects
 funded by the National Science Foundation (NSF),
 Defense Research Projects Agency (DARPA) and Air
 Force Office of Scientific Research USA
- 11.1997-
06.1998 ● *Undergraduate Research Associate*
 Microelectronics Research Group, Institute of Electronic
 Structure and Laser, FORTH, Greece (after receiving an
 undergraduate scholarship by FORTH to work as a research
 assistant)

Awards - Scholarships

- Nov 2010 ● *Greek L' Oreal-Unesco Award for Young Women in
 Science (Physical Sciences)*
- Jul 1999 –
Jan 2004 ● *Graduate Research Assistantship during the entire
 course of her PhD studies at the Physics Department
 of Brown University*
- Sep 1998 –
Jun 1999 ● *Graduate Fellowship during the first year of post-
 graduate studies at the Physics Department of Brown
 University. This scholarship is awarded to only 10% of the
 selected international graduate students.*
- Nov 1997 –
Jun 1998 ● *Undergraduate scholarship: research assistant at the
 Microelectronics Research Group, Foundation for
 Research and Technology (FORTH), Herakleion, Crete,
 Greece*
- Jul 1997 ● *Scholarship award for the MSc program of the Physics
 Department, University of Crete after examination
 during the 9th Summer School of Advanced Physics,
 Physics Department, University of Crete*

Biographical Data

Eleni Makarona received her BSc from the Physics Department of the University of Athens, while during her last year of undergraduate studies she received a scholarship to work as research assistant with the Microelectronics Group of IESL, Foundation for Research and Technology Hellas (FORTH) in Herakleion, Crete. She continued her graduate studies at the Physics Department of Brown University (Rhode Island, USA) after obtaining a full scholarship from the university for the first year and by securing funding through research assistantships throughout her PhD. She received her MSc in Physics in 2000 and her PhD in Physics in 2004 after working extensively on the design, fabrication and characterization of III-Nitride ultraviolet optoelectronic devices and employed several spectroscopic techniques with an emphasis on time-correlated single photon counting (TCSPC). In parallel, she contributed to the fabrication and evaluation of piezoelectric structures and J-aggregates.

Upon her return to Greece, she joined in 2005 the Institute of Microelectronics (now part of the Institute of Nanoscience and Nanotechnology, INN) of NCSR "Demokritos" as Post-doctoral Researcher (Researcher D') and continued her collaboration with the Institute as a Research Associate between 2009 and 2014, when she was elected as an Adjunct Researcher. Since 2018, she holds the position of Senior Researcher (Researcher B') on Silicon Sensors and Nanosystems. After joining INN her research interests have strongly focused on the development of Silicon-based photonic sensors and Point-of-Care/Point-of-Need (PoC/PoN) systems with a special emphasis on bioanalytical determinations for food safety and quality assurance as well as health applications. While at INN, she has also worked on the development of piezoelectric energy harvesting systems and molecular electronic devices, while her current activities -apart from the integrated photonic solutions- include the development of ZnO-based optoelectronics devices and the studies of metal oxide nanostructures and polymer nanocomposites. Between 2009 and 2013 she also taught laboratory courses at the Technical University of Piraeus (now part of the University of West Attica). She is responsible for the Atomic Force Microscopy system of INN and the training of new users.

Dr Makarona has been the member of the organizing committee and program co-chair of international conferences in the field of sensors and micro/nano fabrication (Eurosensors 2011, 4th International Workshop on Multianalyte Biosensing 2011, SPIE Bio-MEMS and Medical Microdevices 2013, Europtode 2014 and MNE 2019) and is a member of the international program committees of the MNE and Eurosensors conference series. She is a member of the editorial board of Sensors (MDPI), guest editor for the Special Issue "Optical Nanosensors for Biosensing" of Sensors (MDPI) and a managing guest editor for the Virtual Special Issue "Nanofabrication" of the Micro and Nano Engineering journal (Elsevier). She regularly acts as a reviewer for almost 20 journals (such as Microelectronic Engineering, Sensors, Chemosensors, Materials, Lab-on-chip, Analyst, Journal of Alloys and Compounds, Journal of Optics and Laser Technology, IEEE Sensors etc). In addition, Dr Makarona has served as a proposal and project evaluator for the EU and the Greek, Romanian and Serbian Governments.

Dr Makarona is the author/co-author of more than 60 articles and conference papers, 3 book chapters and has more than 100 conference presentations ten of which are invited talks. She is the co-inventor of 7 patents. Dr Makarona has supervised 5 internships, 7 BSc theses, 4 MSc theses (in collaboration with the Chemistry Department of the National and Kapodistrian University of Athens, the Physics Department of the University of Patras, the Textile Engineering Department of the Technical University of Piraeus, the Electrical Engineering Department of the National Technical University of Athens and the Department of Wood and Furniture Design and Technology, Technical University of Larissa -currently University of Thessaly). She is currently supervising 2 MSc theses, one in collaboration with the School of Applied Mathematical and Physical Sciences of the National Technical University of Athens and one with the Department of Chemistry of the University of Athens, 3 PhDs, one in collaboration with the Physics Department of the University of Patras, one with the Department of Informatics & Telecommunications of the University of Ioannina and one with the Department of Conservation of Antiquities and Works of Art, University of West Attica as well as 4 internships with students coming from the Materials Engineering, University of Patras, the Department of Chemistry, University of Athens and the Chemical Engineering Department of the National Technical University of Athens. She has also co-supervised -even as a post-doctoral fellow-in collaboration with Dr C. Tsamis (INN, NCSR "Demokritos") 1 PhD Thesis, 3 MSc theses and 7 BSc theses and in collaboration with Dr I. Raptis (INN, NCSR "Demokritos") 1 PhD Thesis.

Apart from the supervision of students, Dr Makarona is actively engaged in the communication of science and especially in outreach programs for Nanotechnology. For that reason she has given several lectures for the general audiences, has been part of demonstrations and live experiments (Researcher's Night and Athens Science Fair), has visited high schools to advise students on career choices in the field of science and regularly teaches at the Summer Schools organized by NCSR "Demokritos" (addressing undergraduate and post-graduate students and professionals) and by the Greek Physicist Association (addressing high-school students). She has also given several interviews for the daily press, magazines and TV shows with her last appearance in the Greek edition of Vogue (October 2020) dedicated to Women in Science as role model.

During the past 3 years, Dr Makarona has developed a keen interest for academic entrepreneurship. She has already written an article on the subject and participated with oral presentations at a Conference dedicated to Innovative Marketing. More importantly, she has been working on the commercialization of photonics solutions for the monitoring of food safety and quality of products along the entire food supply chain as well as for biodiagnostics. The business idea revolving around the Food Industry –pitched by her- has already won the 1st prize at the pitching competition of EIT Food Demo day that was held during the 84th TIF (September 2019) and the 3rd prize at the 1st Agritech Challenge (December 2019). She is currently acting as the Technology Liaison between the product developing team and their investor, Athraa Innovations under a Joint Development Agreement -the first such agreement on technology transfer ever signed at NCSR "Demokritos"- towards the commercialization of a photonic biodiagnostic platform tailored for PoC applications.

A strong advocate of gender equality issues, she has been engaged in promoting the presence of women in Science. Her latest talk on women's inclusion in sciences was delivered on March 27th, 2021 after an invitation from the Greek Physicists Association.

Dr Makarona is the recipient of the 2010 Greek L' Oreal-Unesco Award for Young Women in Science. She is the mother of two children, aged 17 and 13.

Patents

[1] I. Raptis, K. Misiakos, S. Kakabakos, P. Petrou, E. Makarona, M. Kitsara. "Monolithically Integrated Physical Chemical and Biological Sensor Arrays based on Broad-band Mach-Zehnder Interferometry", GR2009000013W·2009-03-09

[2] I. Raptis, K. Misiakos, S. Kakabakos, P. Petrou, E. Makarona, M. Kitsara. "Monolithically Integrated Physical Chemical and Biological Sensor Arrays based on Broad-band Mach-Zehnder Interferometry", WO2009115847A1·2009-09-24

[3] E. Kapetanakis, A.M. Douvas, D. Velessiotis, E. Makarona, P. Argitis, N. Glezos, P. Normand. "Memory devices using proton-conducting polymeric materials", GR2009000023W·2009-04-14

[4] E. Kapetanakis, A.M. Douvas, D. Velessiotis, E. Makarona, P. Argitis, N. Glezos, P. Normand. "Memory devices using proton-conducting polymeric materials", EP2277202A1; GR1007121B; GR20080100269A; WO2009127884A1

[5] K. Misiakos, S. Kakabakos, I. Raptis, E. Makarona, "Integrated Optoelectronic Silicon Biosensor for the Detection of Biomolecules labeled with Chromophore Groups or Nanoparticles, GR1006509B·2009-09-02.

[6] K. Misiakos, E. Makarona, I. Raptis, A. Salapatias, S. Kakabakos, P. Petrou, E. Stavra. "Integrated Broad-band Young Interferometers for Simultaneous Dual Polarization Biosensing Through Amplified Fringe Packet Shifts" GR20160100477A·2018-05-18

[7] K. Misiakos, E. Makarona, I. Raptis, A. Salapatias, S. Kakabakos, P. Petrou, E. Stavra. "Integrated Broad-band Young Interferometers for Simultaneous Dual Polarization Biosensing Through Amplified Fringe Packet Shifts", WO2018051145A3

Research Projects

Project Title	Funding source	Period	Role
PYTHIA* “Monolithically integrated interferometric biochips for label-free early detection of Human diseases” (FP7-ICT-2007-2, Project ID:224030)	EU	05.2008-04.2012	Work Package Leader WP2 Optoelectronic Chip Fabrication
MEMSENSE “Development of novel sensor systems of distributed intelligence”	GSRT	05.2009-02.2012	Key Research Personnel
“Self-assembled ZnO Nanostructures for Engineered Neuronal Networks”* , Bilateral Cooperation Greece-Hungary Contract No HUN53 Hungarian-Greek Intergovernmental S&T Cooperation Programme	GSRT	09.2012-10.2014	Coordinator, original concept and proposal preparation
“Advanced Materials and Devices for Energy Harvesting and Management” under the GSRT Framework KRIPIS I* (MIS: 452100)	GSRT	03.2013-12.2015	Work Package Leader WP4 Nanopiezotronic and Nanothermoelectric devices for energy harvesting
FOODSNIFFER* “FOOD Safety at the point-of-Need via monolithic spectroscopic chip identifying harmful substances in fresh produce” (FP7-ICT-2011-8, Project ID: 318319)	EU	09.2012-02.2016	Key Research Personnel
AURORA* “All-silicon Ultra-sensitive field-deployable integrated Optoelectronic platform for environmental Analysis» SYNERGIA 2011 (GSRT, Contract No SYN11_5_1517)	GSRT	07.2013-10.2016	Coordinator
“Development of Materials and Devices for Industrial, Health, Environmental and Cultural Applications” KRIPIS II* (MIS 5002567)	GSRT	11.2017-today	Key research personnel
Program INNOVATION-EL* (MIS 5002772) “Reinforcement of the Research and Innovation Infrastructure” Action, Operational Programme "Competitiveness, Entrepreneurship and Innovation" (NSRF 2014-2020)-	GSRT	04.2018 today	JRA 3.3.2 Leader Dissemination and Networking Committee Member
FOODSENS* “Rapid Detection of Pathogens and Adulteration in Raw Milk via immersible photonic sensors”	GSRT	29.10.2020-28.10.2023	Work Package Leader WP1 Design and Fabrication of Optoelectronic Chips - Conceptualization of Project – PI for INN

GOHYDRO* : A smart-sensing AI-driven platform for scalable, low-cost hydroponic units	ERA-NET Co-fund ICT-AGRI- FOOD	01.03.2021- 28.02.2023	Work Package Leader of WP2 “Multi-modal Sensor Kits” and WP7 “Dissemination” - Conceptualization – PI for INN
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- conceptualization and active participation in the proposal writing

Conference Organization

[CO1]. Member of the Local Organizing Committee, Eurosensors XXV, September 4-7, 2011, Athens, Greece

[CO2]. Program Co-chair, 4th International Workshop on Multianalyte Biosensing , September 7-8, 2011 Athens, Greece

[CO3]. Program Co-chair, SPIE Bio-MEMS and Medical Microdevices, April 25-26, 2013, Grenoble, France

[CO4]. Program Co-chair, EUROPT[®]ODE XII, April 13-16, 2014, Athens, Greece

[CO5]. Member of the Local Organizing Committee, 45th Micro and Nanoengineering Conference (MNE), September 23-26, 2019, Rhodes, Greece

[CO6]. Member of the Technical Program Committee for the MNE Conference series since 2006

Reviewing and Other Activities

12.2005-today *Proposal and Project Evaluator* for the EU and the Greek, Romanian and Serbian Governments

12.2005-today *Reviewer* for the following journals:

-Lab-on-Chip and Analyst (RSC Publishing)	--Sensors and Actuators B (Elsevier)
-Chemical Communications (Elsevier)	-Journal of Physics: Condensed Matter (IOP)
-Materials Science and Engineering B (Elsevier)	-Journal of the American Chemical Society (ACS)
-Journal of Thin Solid Films (Elsevier)	-Physica status solidi (Elsevier)
-Materials Chemistry and Physics (Elsevier)	-Materials (MDPI)
-Microelectronic Engineering (Elsevier)	-Sensors (MDPI)
-Journal of Optics and Laser Technology (Elsevier)	-Chemosensors (MDPI)
-Journal of Alloys and Compounds (Elsevier)	-Nanomaterials (MDPI)
	-Applied Sciences (MDPI)
	-Metals (MDPI)

2019- today *Member of the Editorial Board* of *Sensors* (MDPI)

2013 *Co-Editor* SPIE Proceedings Volume 8765, 2013

2019- today *Guest Editor* for the Special Issue “Optical Nanosensors for Biosensing” of *Sensors* (MDPI) and of the Special Issue “Photonic structures for biosensors : Technology and Applications”

2019- today *Managing Guest Editor* of the Virtual Special Issue “Nanofabrication” of the *Micro and Nano Engineering* journal (Elsevier)

2021-today *Member of the Editorial Board* of *Chips* (MDPI)

Invited Lectures

- [11]. "GaN-based tunnel junction in optical device", T. Takeuchi, G. Hasnain, S. W. Corzine, M. Hueschen, R. P. Schneider, Jr., C.P.Kocot, M.Blomqvist, Y-L. Chang, D. Lefforge, M. R. Krames, L.W. Cook, S. Stockman,; J. Han, M. Diagne, Y. He, E. Makarona, A. V. Nurmikko, Physics and Simulation of Optoelectronic Devices X, (Invited) – Proc. SPIE 4646,555-562 (2002)
- [12]. "Broad-band Mach-Zehnder Interferometer biosensor targeting the early detection of human diseases through label-free monitoring of protein concentrations and DNA mutations", I. Raptis, E. Makarona, M. Kitsara and K. Misiakos, 36th International Conference on Micro- and Nano-Engineering, MNE2010, Genoa, Italy
- [13]. "Monolithically Integrated Mach-Zehnder Biosensors for Real-time Label-free Monitoring of Biomolecular Reactions", E. Makarona, P. S. Petrou, A. Bourkoula, A. Botsialas, M. Kitsara, S. E. Kakabakos, R. Stoffer, G. Jobst, G. Nounesis, I. Raptis and K. Misiakos, 33rd Annual International Conference of the IEEE Engineering in Medicine and Biology Society, IEEE EMBC 2011, Boston, USA
- [14]. "Micro- and Nanotechnologies for Energy Harvesting and Sensing", E. Makarona, Invitation from the Institute of Chemistry, Technology and Metallurgy (ICTM), Center of Microelectronic Technologies and Single Crystals (CMTM), University of Belgrade
- [15]. "Monolithic silicon interferometric optoelectronic devices for label-free multi-analyte biosensing applications", K. Misiakos, E. Makarona, A. Salapatas, I. Raptis, A. Psarouli, S. E. Kakabakos, P. Petrou, M. Hoekman, R. Stoffer, K. Tukkiniemi, G. Jobst, SPIE Photonics West 2013- OPTO, February 2013, San Francisco, USA
- [16]. "All-silicon Monolithic Optoelectronic Platform for Multi-analyte Biochemical Sensing", K. Misiakos, E. Makarona, I. Raptis, A. Salapatas, A. Psarouli, S. Kakabakos, P. Petrou, M.Hoekman, R. Heidemac, R. Stoffer, K. Tukkiniemi, M. Soppanen, G. Jobst, G. Nounessis, A.Budkowski, J. Rysz, SPIE Microtechnologies, April 24-26 2013, Grenoble, France
- [17]. "Piezoelectric Nanogenerators on Flexible Substrates for Self-Powered Systems and Sensors", E. Makarona, SPIE Security + Defense 2014, Unmanned/Unattended Sensors and Sensor Networks
- [18]. "Si-based Monolithically Integrated Polychromatic Interferometers: a new enabling tool for food safety applications", E. Makarona, I. Raptis, P. Petrou, S. Kakabakos and K. Misiakos, Photonica 2015, V International School and Conference on Photonics, August 2015
- [19]. "Integrated Optoelectronic Platform for Rapid Point-of-Need Food Safety Applications", I.Raptis, E. Makarona, P. Petrou, S. Kakabakos and K. Misiakos, E-MRS 2016
- [10]. "Monolithically Integrated Biosensors", Eleni Makarona, upcoming Europtrode Conference 2020 (μεταφέρθηκε λόγω πανδημίας Νοεμβρίου 2021)
- [11]. "Metal Oxide/Polymer Nanocomposites and Lithographic Patterning", Eleni Makaron and Margarita Chatzichristidi", 13th Hellenic Polymer Society International Conference, Decemeber 12-16, 2021.

List of Publications in International Peer-reviewed Scientific Journals

1999

[J1]. A. Georgakilas, K. Michelakis, M. Kayambaki, K. Tsagaraki, E. Macarona, Z. Hatzopoulos, A.Vila, M. Calamiotou, "Material properties of InAlAs layers grown by MBE on vicinal (111)B InP substrates", **Journal of Crystal Growth**, **201**, 248-251 (1999)

2000

[J2]. A. Georgakilas, K. Tsagaraki, E. Makarona, G. Constantinidis, M. Adroulidaki, M. Kayambaki, E. Aperathitis, N.T. Pelekanos, "Direct MBE growth of GaN on GaAs substrates for integrated short wavelength emitters", **Materials Science in Semiconductor Processing**, **3** (5-6),511-515 (2000)

[J3]. H. Zhou, M. Diagne, E. Makarona, A.V. Nurmikko, J. Han, K.E. Waldrip, J.J. Figiel, "Near ultraviolet optically pumped vertical cavity laser", **Electronics Letters**, **36** (21),1777-1779 (2000)

2001

[J4]. K.E. Waldrip, J. Han, J.J. Figiel, H. Zhou, E. Makarona, A.V. Nurmikko, "Stress engineering during metalorganic chemical vapor deposition of AlGaIn/GaN distributed Bragg reflectors", **Applied Physics Letters**, **78** (21),3205-3207 (2001)

[J5]. I. Ozden, E. Makarona, A.V. Nurmikko, T. Takeuchi, M. Krames, "A dual-wavelength indium gallium nitride quantum well light emitting diode", **Applied Physics Letters**, **79** (16), 2532-2534 (2001)

[J6]. M. Diagne, Y. He, H. Zhou, E. Makarona, A.V. Nurmikko, J. Han, T. Takeuchi, M. Krames, "A High Injection Resonant Cavity Violet Light Emitting Diode Incorporating (Al,Ga)N Distributed Bragg Reflector", **Physica Status Solidi (a)**, **188**(1), 105-108 (2001)

[J7]. M. Diagne, Y. He, H. Zhou, E. Makarona, A.V. Nurmikko, J. Han, K.E. Waldrip, M. Krames, "Vertical cavity violet light emitting diode incorporating an aluminium gallium nitride distributed Bragg mirror and a tunnel junction", **Applied Physics Letters**, **79** (22), 3720-3722 (2001)

2002

[J8]. E. Makarona, B. Daly, J.-S. Im, H. Maris, A.V. Nurmikko, J. Han, "Coherent generation of 100 GHz acoustic phonons by dynamic screening of piezoelectric fields in AlGaIn/GaN multilayers", **Applied Physics Letters**, **81** (15),2791-2793 (2002)

2004

[J9]. H. Peng, E. Makarona, Y.He, Y.-K.Song, A.V. Nurmikko, J. Su, Z. Ren, J. Han, "Ultraviolet light-emitting diodes operating in the 340 nm wavelength range and application to time-resolved fluorescence spectroscopy", **Applied Physics Letters**, **85** (8),1436-1438 (2004)

2008

[J10]. D. Velessiotis, D. Maffeo, C. Millios, E. Makarona, C. Viswanathan, K. Yannakopoulou, I. Mavridis, Z. Pikramenou, N. Glezos, "Molecular Nanodevices based on Functionalized Cyclodextrins", **Physica Status Solidi (A) Applications and Materials** **205** (11), pp. 2532-2535 (2008)

[J11]. T. Speliotis, E. Makarona, F. Chouliaras, C.A. Charitidis, C. Tsamis, D. Niarchos, "Effect of deposition pressure and post deposition annealing on SmCo thin film properties", **Physica Status Solidi (c)** **15** (12), pp 3759–3762 (2008)

[J12]. E. Makarona, T. Speliotis, G. Niarchos, D. Niarchos, C. Tsamis, “ZnO nanorod growth based on a low-temperature silicon-compatible combinatorial method”, **Physica Status Solidi (c)**, **5** (12), pp 3809–3812 (2008)

[J13]. K. Misiakos, E. Makarona, M. Kitsara, I. Raptis, “Monolithic Silicon Optocoupler Engineering based on Tapered Waveguides”, **Microelectronic Engineering**, **85** (5-6), pp 1074-1076 (2008)

[J14]. E. Makarona, E. Kapetanakis, D. Velessiotis, A. Douvas, P. Argitis, P. Normand, T. Gotszalk, M. Woszcyna, N. Glezos, “Vertical Devices of Self-Assembled Hybrid Organic/Inorganic Monolayers based on Tungsten Polyoxometallates”, **Microelectronic Engineering**, **85** (5-6), pp 1399-1402 (2008)

[J15]. A. M. Douvas, E. Makarona, N. Glezos, P. Argitis, J. A. Mielczarski, and E. Mielczarski, Polyoxometalate-Based Layered Structures for Charge Transport Control in Molecular Devices”, **ACS Nano**, **2** (4), pp. 733-742 (2008)

[J16]. E. Kapetanakis, A. M. Douvas, D. Velessiotis, E. Makarona, P. Argitis, N. Glezos, and P. Normand, “Molecular Storage Elements for Proton Memory Devices”, **Advanced Materials**, **20** (23), pp. 568-4574 (2008)

2009

[J17]. E. Kapetanakis, A. M. Douvas, D. Velessiotis, E. Makarona, P. Argitis, N. Glezos, P. Normand, “Hybrid organic-inorganic materials for molecular proton memory”, **Organic Electronics**, **10**, pp. 711–718 (2009)

2010

[J18]. M. Kitsara, P. Petrou, D. Kontziampasis, K. Misiakos, E. Makarona, I. Raptis and K. Beltsios, “Biomolecular Layer Thickness Evaluation using White Light Reflectance Spectroscopy”, **Microelectronic Engineering**, **87**, pp. 802-805 (2010)

[J19]. G. Niarchos, E. Makarona, C. Tsamis, “Growth of ZnO nanorods on patterned templates for efficient, large-area energy scavengers”, **Microsystem Technologies** **16**, pp.669-675 (2010)

[J20]. M. Kitsara, K. Misiakos, I. Raptis and E. Makarona, “Integrated Optical Frequency-resolved Mach-Zehnder Interferometers for Label-free Affinity Sensing”, **Optics Express** **18** (8), pp. 8193-8206 (2010)

2013

[J21]. M. A. Botzakaki , N. Xanthopoulos, E. Makarona, C.Tsamis, S. Kennou, S.Ladas, S.N. Georga and C.A. Krontiras, “ALD deposited ZrO₂ ultrathin layers on Si and Ge substrates: A multiple technique characterization”, **Microelectronic Engineering** **112**, pp. 208-212 (2013)

2014

[J22]. K. Misiakos, I. Raptis, A. Salapatas, E. Makarona, A. Botsialas, M. Hoekman, R. Stoffer, and G. Jobst, “Broad-band Mach-Zehnder interferometers as high performance refractive index sensors: Theory and monolithic implementation”, **Optics Express**, **22** (8), pp. 8856-8870 (2014)

[J23]. E. Polydorou, E. Makarona, A. Soutlati, D. Georgiadou, T. Kyrasta, T. Speliotis, C. Tsamis, N. Papanikolaou, P. Argitis, I. Kostis, D. Davazoglou and M. Vasilopoulou, “Solution-processed nanostructured zinc oxide cathode interfacial layers for efficient inverted organic photovoltaics”, **Microelectronic Engineering**, **119**, pp. 100-104 (2014)

[J24]. K. Misiakos, I. Raptis, E. Makarona, A. Botsialas, A. Salapatas, P. Oikonomou and G. Jobst, “All-silicon monolithic Mach-Zehnder interferometer as a refractive index and biochemical sensor”, **Optics Express**, **22** (22), pp. 26803-26813 (2014)

2015

- [J25]. E. Makarona, M.C. Skoulikidou, Th. Kyrasta, A. Smyrnakis, A. Zeniou, E. Gogolides and C. Tsamis, "Controllable fabrication of bioinspired three-dimensional ZnO/Si nanoarchitectures", **Materials Letters**, 142, pp. 211-216 (2015)
- [J26]. A. Psarouli, A. Salapatas, A. Botsialas, P. S. Petrou, I. Raptis, E. Makarona, G. Jobst, K. Tukkiniemi, M. Sopanen, R. Stoffer, S. E. Kakabakos & K. Misiakos, "Monolithically integrated broad-band Mach-Zehnder interferometers for highly sensitive label-free detection of biomolecules through dual polarization optics", **Scientific Reports**, 5, article no. 17600 (2015)

2016

- [J27]. E. Makarona, P. Petrou, S. Kakabakos, K. Misiakos and I. Raptis, "Point-of-Need Bioanalytics based on Planar Optical Interferometry", **Review Paper, Biotechnology Advances**, Special Issue "Trends in IVD & mH", 34 (3), 209-233 (2016)
- [J28]. M. Angelopoulou, A. Botsialas, A. Salapatas, P. S. Petrou, W. Haasnoot, E. Makarona, G. Jobst, D. Goustouridis, A. Siafaka-Kapadai, I. Raptis, K. Misiakos and S. E. Kakabakos, "Assessment of goat milk adulteration with a label-free monolithically integrated optoelectronic biosensor", **Analytical and Bioanalytical Chemistry**, 407 (14) (2016)
- [J29]. E. Makarona, B. Peter, I. Szekacs, C. Tsamis and R. Horvath, "ZnO nanostructure templates as a cost-efficient mass-producible route for the development of cellular networks", **Materials**, 9 (4) 256 (2016)

2017

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- [C45]. E. Makarona, A. Kritharidou, C. Tsamis and Z. Georgoussi
 “Zinc Oxide Nanostructured Substrates as Alternative Low-cost Templates for the Development of Cell-based Circuits”
Euroensors XXVI
- [C46]. G. Niarchos, E. Makarona, G. Voulazeris, Th. Speliotis, A. Arapoyanni, C. Tsamis
 “SOI-based Vibrational Energy Harvesting Microgenerators”
Euroensors XXVI
- [C47]. M. Botzakaki, G. Skoulatakis, N. Xanthopoulos, C. Tsamis, E. Makarona, S. Kennou, S. Ladas, S.N. Georga and C.A. Krontiras
 “ALD deposited ZrO₂ ultrathin films on Si substrates: morphology and electrical evaluation”
XXVIII Panhellenic Conference on Solid State Physics and Material Science
- [C48]. M. Botzakaki, G. Skoulatakis, N. Xanthopoulos, C. Tsamis, E. Makarona, S. Kennou, S. Ladas, S.N. Georga and C.A. Krontiras
 “ALD deposited ZrO₂ ultrathin layers on Si and Ge substrates: A multiple technique characterization”
5th International Conference on Micro&Nanoelectronics, Nanotechnology and MEMs
- [C49]. I. Raptis, P. Petrou, E. Makarona, A. Botsialas, A. Psarouli, S. Kakabakos, G. Jobst, R. Stoffer, M. Hoekman, M. Sopenan, K. Tukkiemi and K. Misiakos
 “Real-time Label-free Monitoring of Biomolecular Reactions by Monolithically Integrated Mach-Zehnder Biosensors”
8th Aegean Analytical Chemistry Days

2013

- [C50]. K. Misiakos, E. Makarona, A. Salapatas, I. Raptis, A. Psarouli, S. E. Kakabakos, P. Petrou, M. Hoekman, R. Stoffer, K. Tukkiniemi, G. Jobst
“Monolithic silicon interferometric optoelectronic devices for label-free multi-analyte biosensing applications”,
Invited Presentation, SPIE Photonics West 2013- OPTO
- [C51]. A. Kritharidou, Z. Georgoussi, C. Tsamis and E. Makarona,
“Zinc Oxide Nanostructures as Low-cost Templates for Neuronal Circuits”
SPIE Microtechnologies 2103 – Bio-MEMS and Medical Microdevices (EMT103)
- [C52]. E. Makarona, G. Niarchos, G. Voulazeris and C. Tsamis
“Flexible piezoelectric microgenerators based on nanotextured ZnO films”
SPIE Microtechnologies 22013 – Smart Sensors (EMT101)
- [C53]. M. Botzakaki, V. Gianneta, N. Xanthopoulos, C. Tsamis, E. Makarona, S. Kennou, S. Ladas, S.N. Georga and C.A. Krontiras
“Multiple technique characterization of ALD deposited Al/Al₂O₃/p-Ge MOS structures: The influence of the deposition temperature”
E-MRS Fall Meeting 2013 (Symposium A : Alternative semiconductor integration in Si microelectronics: materials, techniques & applications)
- [C54]. E. Polydorou, A. Soultati, O. Makrygenni, E. Makarona, C. Tsamis, N. Papanikolaou, P. Argitis, D. Davazoglou and M. Vasilopoulou
“Solution-processable nanostructured zinc oxide cathode interfacial layers for efficient and stable inverted organic photovoltaics”
39th International Conference on Micro- and Nano-Engineering, MNE2013

2014

- [C55]. K. Misiakos, A. Salapatas, E. Makarona, Y. Petrou, S. Kakabakos, R. Stoffer, G. Jobst, M. Hoekman, I. Raptis
“Spectrally-Resolved Mach-Zehnder Interferometry as an Ultra-sensitive analytical tool”
EUROPTIODE XII 2014
- [C56]. A. Psarouli, A. Botsialas, A. Salapatas, P.S. Petrou, I. Raptis, E. Makarona, G. Jobst, N. Chaniotakis, K. Misiakos, S.E. Kakabakos
“Real-time, label-free and multi-analyte detection of biomolecules using monolithically integrated Mach-Zehnder interferometers”
EUROPT(R)ODE XII 2014
- [C57]. A. Kritharidou, Th. Kyrasta, Z. Georgoussi, C. Tsamis and E. Makarona
“ZnO-nanostructure Modified Templates for Cell-based Optical Sensors”
EUROPT(R)ODE XII 2014
- [C58]. M. Angelopoulou, A. Botsialas, A. Salapatas, P.S. Petrou, W. Haasnoot, E. Makarona, G. Jobst, K. Misiakos, S.E. Kakabakos
“Development of a label-free immunosensor based on monolithically integrated Mach-Zehnder Interferometers for the quantification of bovine milk in goat milk”
EUROPT(R)ODE XII 2014
- [C59]. Beatrix Peter, Anna Kritharidou, Zafiroula Georgoussi, Janos Volk, Christos Tsamis, Robert Horvath and Eleni Makarona
“ZnO-based Hierarchical Templates for Cellular Cultures”
Annual Conference of the Hungarian Society for Microscopy 2014
- [C60]. E. Makarona
“Piezoelectric Nanogenerators on Flexible Substrates for Self-powered Systems and Sensors”
Invited Presentation
SPIE Security + Defense 2014, Unmanned/Unattended Sensors and Sensor Networks,

- [C61]. E. Makarona, Th. Kyrasta, A. Smyrnakis, A. Zeniou, E. Gogolides and C. Tsamis
 “Fabrication of tunable three-dimensional ZnO/Si Nanoarchitectures”
40th International Conference on Micro- and Nano-Engineering, MNE2014
- [C62]. A. Kritharidou, B. Peter, T. Kyrasta, R. Horvath, C. Tsamis, Z. Georgoussi and E. Makarona
 “Cost-efficient Templates of ZnO-based Nanostructures for Cellular Networks”
40th International Conference on Micro- and Nano-Engineering, MNE2014
- [C63]. E. Makarona, Th. Kyrasta, and C. Tsamis
 “ZnO-based piezoelectric microgenerators on flexible substrates”
40th International Conference on Micro- and Nano-Engineering, MNE2014
- [C64]. E. Makarona, A. Salapatras, A. Botsialas, I. Raptis, T. Sarafidis and K. Misiakos
 “Photonic Engineering of an All-silicon Monolithic Optocoupler: On-chip Polarization Filtering”
40th International Conference on Micro- and Nano-Engineering, MNE2014
- [C65]. M. Botzakaki, G. Skoulatakis, P. Svarnas, C. Tsamis, E. Makarona, S. Kennoy, S. Ladas, S. N. I. Georga and C.A. Krontiras
 “ALD deposited thin HfO₂ films: electrical and structural characterization”
XXX Panhellenic Conference on Solid State Physics and Materials Science

2015

- [C66]. I. Raptis, E. Makarona, P. Petrou, S. Kakabakos and K. Misiakos
 “Monolithically Integrated Photonic Platform for Point-of-Need Application in Health and Food Safety”
AISEM (Italian Association for Sensors and Microsystems) XVIII Annual Conference
- [C67]. Ch. Koutzagioti, G. Ntalos, C. Tsamis and E. Makarona
 “Low-cost multi-functional bioinspired wood coatings based on ZnO nanostructures”
E-MRS 2015 Spring Meeting, Symposium EE Protective coatings and thin films
- [C68]. C. Prionostis, B. Athanassiou, E. Makarona, G. Skoufias, E. Tegou, M. C. Skoulikidou, C. Tsamis
 “Optimization of ZnO nanowires for energy harvesting applications”
E-MRS 2015 Spring Meeting, Symposium M Multifunctional binary and complex oxides films and nanostructures for nanoelectronics and energy applications – II
- [C69]. P. Petrou, A. Salapatras, A. Botsialas, E. Makarona, I. Raptis, S. Kakabakos and K. Misiakos
 “Biosensors based on polychromatic Young interferometers monolithically integrated on silicon chips”
BITE 2015, 4th International Conference on Bio-Sensing Technology
- [C70]. K. Misiakos, P. Petrou, S. Kakabakos, A. Salapatras, A. Botsialas, I. Raptis, I. Kylintirea, T. Sarafidis, A. Lambidonis, A. Varouxis and E. Makarona
 “Si-based Monolithic Polychromatic Young Interferometer as an Enabling Tool for Point-of-Need Food Safety Determinations”
IEEE Biophotonics 2015
- [C71]. P. Petrou, A. Salapatras, A. Botsialas, E. Makarona, I. Raptis, S. Kakabakos and K. Misiakos
 “Polychromatic Young Interferometers Integrated on Silicon Chips for Biosensing Applications”
MiNaB-ICT 2015, International Workshop on “Micro-Nano-Bio-ICT Convergence, Current Research and Future Trends”
- [C72]. I. Raptis (on behalf of the FOODSNIFFER consortium – Dr E. Makarona is a member of the project consortium)
 “Monolithically integrated platform for Point-of-Need applications in food safety”
MiNaB-ICT 2015, International Workshop on “Micro-Nano-Bio-ICT Convergence, Current Research and Future Trends”
- [C73]. E. Makarona, I. Raptis, P. Petrou, S. Kakabakos and K. Misiakos

“Si-based Monolithically Integrated Polychromatic Interferometers: a new enabling tool for food safety applications”

Photonica 2015, V International School and Conference on Photonics, August 2015

Invited Lecture

- [C74]. E. Makarona, B. Athanassiou, C. Prionistis, E. Tegou and C. Tsamis
“A cost-efficient solution-based process for the development of ZnO nanostructures: a comprehensive study of the role of the seeding layer formation conditions”
Euroensors XXIX
- [C75]. G. Niarchos, G. Dubourg, G. Afroudakis, V. Tsouti, E. Makarona, J. Matovic, V. Crnojevic-Bengin and C. Tsamis
“Low-cost paper-based humidity sensor based on ZnO nanoparticles”
Euroensors XXIX
- [C76]. P. Petrou, E. Stavra, A. Salapatras, A. Botsialas, S. Kakabakos, K. Misiakos and E. Makarona
“Atrazine detection in drinking water samples with monolithically integrated polychromatic Young interferometric chips”
Euroensors XXIX
- [C77]. G. Afroudakis V. Tsouti, E. Makarona, D. Tsamakis. And C. Tsamis
“Room temperature humidity sensors based on ZnO nanoparticles and nanostructured films”
5th International Conference on Materials and Applications for Sensors and Transducers, IC-MAST 2015
- [C78]. P Petrou , E Stavra, A Salapatras, A Botsialas, I Raptis, S Kakabakos, K Misiakos and E. Makarona
“Monolithically integrated on silicon polychromatic Young Interferometer for label-free pesticide detection”
5th International Conference on Materials and Applications for Sensors and Transducers, IC-MAST 2015
- [C79]. M. Angelopoulou, V. Pagkali, Z. Tsiolla, A. Botsialas, A. Salapatras, P.S. Petrou, E. Makarona, G. Jobst, D. Goustouridis, I. Raptis, S.E. Kakabakos and K. Misiakos
“Monolithically integrated photonic platform for Point-of-Need application in food safety”
41st International Conference on Micro- and Nano-Engineering, MNE2015
- [C80]. G. Afroudakis, V. Tsouti, G. Skoufias, E. Makarona, D. Tsamakis and C. Tsamis
“Low power chemical sensor based on nanostructured ZnO films”
6th International Conference "Micro&Nano" 2015
- [C81]. E. Makarona, G. Papageorgiou, A. Giannouli, D. Kati and C. Tsamis
“Electrical characterization of ZnO p-n diodes based on an all-wet chemical process”
6th International Conference "Micro&Nano" 2015
- [C82]. G. Skoufias, V. Tsouti, E. Makarona, M. A. Botzakaki, S. N. Georga, C. A. Krontiras and C. Tsamis
“Optimization of ZnO-based piezoelectric harvesters on flexible substrates” **6th International Conference "Micro&Nano" 2015**
- [C83]. V. Pagkali, P. Petrou, A. Economou, A. Salapatras, E. Makarona, K. Misiakos, I. Raptis, and S. Kakabakos
“Detection of ochratoxin A in beer samples by ELISA and a label-free optoelectronic biosensor” **14th International Conference on Environmental Science and Technology CEST2015**

2016

- [C84]. I. Raptis, K. Misiakos, E. Makarona, Al. Salapatras, P. Petrou, S. Kakabakos, A. Botsialas, G. Jobst, W. Haasnoot, A. Fernandez-Alba, M. Lees and E. Valamontes
“A miniaturized optoelectronic system for rapid quantitative label-free detection of harmful species in food”
SPIE Photonics West 2016
- [C85]. E. Stavra, A. Malainou, A. Salapatras, A. Botsialas, P. Petrou, I. Raptis, E. Makarona, S. E. Kakabakos and K. Misiakos

“Monolithically-integrated Young interferometers for label-free and multiplexed detection of biomolecules”

SPIE Photonics West 2016, Silicon Photonics XI

- [C86]. K. Misiakos, P.S. Petrou, A. Malainou, E. Stavra, S.E. Kakabakos, A. Salapatas, A. Botsialas, I. Raptis and E. Makarona
“Polychromatic Young Interferometry: a novel tool for label-free detection of analytes”
EUROPT(R)ODE XIII 2016
- [C87]. P.S. Petrou, E. Makarona, G. Jobst, W. Haasnoot, M. Lees, A. R. Fernández-Alba, I. Raptis, S.E. Kakabakos and K. Misiakos
“Fast & label-free determinations of harmful substances along the entire food chain: The FOODSNIFFER approach”
EUROPT(R)ODE XIII 2016
- [C88]. I.Raptis, E. Makarona, P. Petrou, S. Kakabakos and K. Misiakos
“Monolithically Integrated Optoelectronic Platform for Rapid Point-of-Need Food Safety Applications”
Invited presentation
E-MRS 2016
- [C89]. E. Makarona, T. Kyrasta, G. Priniotakis, I. Chronis and C. Tsamis
“Growth of Nanostructured Zinc Oxide on Fabrics for e-textile applications”
16th World Textile Conference, AUTEX 2016, Session: Smart Functional and Interactive Textiles
- [C90]. G. Niarchos, G. Dubourg, G. Afroudakis, V. Tsouti, E. Makarona, J. Matovic, V. Crnojevic-Bengin and C. Tsamis
“Paper-based humidity sensor coated with ZnO nanoparticles: The influence of ZnO”
EuroSensors XXX
- [C91]. G. Skoufias, V. Tsouti, E. Makarona, G. Niarchos, M.A. Botzakaki, S. Georga, C. A. Krontiras, V. Crnojevic-Bengin, C. Tsamis
“Performance optimization of ZnO nanostructure-based flexible energy harvesters”
EuroSensors XXX
- [C92]. G. Niarchos, G. Dubourg, G. Afroudakis, V. Tsouti, E. Makarona, J. Matovic, V. Crnojevic-Bengin and C. Tsamis
“Humidity sensing with paper-based sensors coated with ZnO nanoparticles”
International Conference on Bioscience ICBS 2016

2017

- [C93]. E. Makarona, T Pilioura, A Karytinou, V Psycharis, G. Priniotakis and C Tsamis
“Decoration of yarns and fabrics with ZnO nanostructures for smart textile applications”
AUTEX World Textile Conference 2017

2018

- [C94]. A. Giannouli, M. Gontika, V. Prifti, P. Galanis, A. Siaraka, E. Makarona, M. Mpotzakaki, S. Georga, C. Krontiras and C. Tsamis
“Evaluation of high-k materials grown by Atomic Layer Deposition for triboelectric generators”
44th International Conference on Micro- and Nano-Engineering, MNE 2018
- [C95]. C. Tsamis, V. Prifti, A. Giannouli, A. Siaraka, A. Segkos¹, A. Bardakas, E. Makarona, M. Botzakaki, S. N. Georga, C. A. Krontiras, Y. Zhang, Y. Duan, G. Shao, Y. Song
“Triboelectric generators: Influence of surface modification on electrical performance”
Micro and Nano 2018 Conference
- [C96]. E. Makarona
“Academic Entrepreneurship: Transforming the Role of Research for Knowledge-based Economies”
International Conference on Strategic Innovative Marketing and Tourism 2018, ICSIMAT 2018

- [C94]. A. Giannouli, M. Gontika, V. Prifti, P. Galanis, A. Siaraka, E. Makarona, M. Mpotzakaki, S. Georga, C. Krontiras and C. Tsamis
“Evaluation of high-k materials grown by Atomic Layer Deposition for triboelectric generators”
44th International Conference on Micro- and Nano-Engineering, MNE 2018

2019

- [C95]. G.P. Papageorgiou, S. Georga, C. Krontiras, E. Makarona
“Hydrothermally-developed ZnO pn-homojunctions on Si for optoelectronic applications”
45th International Conference on Micro- and Nano-Engineering, MNE 2019
- [C96]. G.P. Papageorgiou, A. G. Karydas, V. Kantarelou, G. Papageorgiou, E. Makarona
“Combining bottom-up and top-down approaches with micro X-ray fluorescence spectroscopy for controllable fabrication of periodic ZnO nanostructures”
45th International Conference on Micro- and Nano-Engineering, MNE 2019
- [C97]. K. Misiakos, E. Makarona, M. Hoekman, R. Fyrogenis, K. Tukkiniemi, G. Jobst, P. S. Petrou, S. E. Kakabakos, A. Salapatras, D. Goustouridis, M. Harjanne, P. Heimala, A. Budkowski, M. Lees and I. Raptis
“Silicon-based Monolithic Spectroscopic Circuit for Label-free Point-of-Need Diagnostics”
45th International Conference on Micro- and Nano-Engineering, MNE 2019
- [C98]. G. P. Papageorgiou, V. Psycharis, M. Katsikini, F. Pinakidou, E. Paloura, E. Makarona
“Lithium-Doping of ZnO: is it possible to chemically produce p-type ZnO?”
45th International Conference on Micro- and Nano-Engineering, MNE 2019
- [C99]. V. Kilikoglou, S.H. Anastasiadis, Ph. Komninou, E.I. Kamitsos, D. Tsoukalas, V. Bourganos, M. Karakasidis, E. Makarona and M. Holiastou
“INNOVATION-EL: The National Nanotechnology Infrastructure Network of Greece”
45th International Conference on Micro- and Nano-Engineering, MNE 2019
- [C100]. V. Constantoudis, A. Arapis, M. Chatzigeorgiou, E. Makarona and E. Gogolides
“Measuring the spatial complexity of nanostructured surfaces”
Nanoscale 2019

2020

- [C100]. E. Makarona
“Immunity Passports in the COVID-19 Era: Facts, Fiction and Perspectives”
International Conference on Strategic Innovative Marketing and Tourism 2020, ICSIMAT 2020
- [C101]. V. Constantoudis, A. Arapis, M. Chatzigeorgiou, E. Makarona, A. Milionis, C. W. E. Lam, D. Poulidakos and E. Gogolides
“The challenge of nanocomplexity”
NANOTECHNOLOGY 2020: International Conferences & Exhibition on Nanotechnologies - Organic Electronics & Nanomedicine

2021

- [C102]. G. Geka, G. Papageorgiou, M. Chatzichristidi, A.G. Karydas, V. Psycharis and E. Makarona “CuO/PMMA polymer nanocomposites as resist materials for e-beam lithography”
Athens Conference on Advances in Chemistry (ACAC) 2020
- [C103]. A. Dimou, A. Ninou, M. Chatzichristidi, V. Constantoudis and E. Makarona
“Wet chemical synthesis of CuO and NiO nanoarchitectures and nanometrological analysis”
Athens Conference on Advances in Chemistry (ACAC) 2020
- [C104]. G. Papageorgiou, V. Psycharis, M. Androulidaki, O. Karabinaki, D. Christofilos and E. Makarona, “Chemical Synthesis of p-type Zinc Oxide Nanostructures”
Athens Conference on Advances in Chemistry (ACAC) 2020
- [C105]. E. Makarona (Invited Lecture)

“Monolithically Integrated Biosensors”
Europtorde 2020–postponed for Novemeber 2021

- [C106].** E. Makarona and M. Chatzichristidi (Invited Lecture)
“Metal Oxide/Polymer Nanocomposites and Lithographic Patterning”
13th Hellenic Polymer Society International Conferenc