

Maria Vasilopoulou



PERSONAL DATA

Date of Birth: January 25, 1971
Marital Status: Married, two children (Konstantinos and Zoe)
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"Demokritos"
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EDUCATION

2002

Ph.D. in Materials and Processes for Photolithography, National Technical University of Athens (NTUA), Athens, Greece - Ph.D.Thesis entitled: "Novel Materials and Processes for High Resolution Photolithography"

1997

Master Degree in Experimental Condensed Matter and Materials Physics, National Center for Scientific Research Demokritos, Athens, Greece.

1995

B.Sc. in Physics, Department of Physics, National and Kapodistrian University of Athens, Greece.

WORK EXPERIENCE

2006 – Today

Permanent Research Staff , National Centre for Scientific Research "Demokritos", Athens, Greece. Research in Molecular Semiconducting Electronic Materials and Plastic Organic Optoelectronic/Photonic Devices.

2002 – 2013

Adjunct Assistant Professor on contract, Technological and Educational Institute (TEI) of Pireaus, Athens, Greece. Instructor in the mandatory undergraduate courses Physics of Electronic Devices and Optoelectronics.

2002 – 2006

Collaborating Postdoctoral Researcher, National Center for Scientific Research (NCSR) "Demokritos", Athens, Greece. Research in Technology of Polymer Semiconducting Electronic Materials and Devices.

SCHOLARSHIPS - HONORS

1996– 2001

PhD Research Scholarship/Institute of Microelectronics/National Centre for Scientific Research "Demokritos", Athens, Greece.

May 2010

Electronic Business Journal Vertical News, Electronics, (about our work related to application of molecular oxides in OLEDs <http://www.verticalnews.com/newsletters/Electronics-Newsweekly/2010-05-26/60695ELE.html>).

May 2012

Best Poster Award at the EMRS 2012 Spring Meeting for the poster entitled "Water-soluble porphyrin thin films as nanostructured electron extraction layers in organic photovoltaic cells" by M.Vasilopoulou, A.M.Douvas, L.C.Palilis, L.Sygellou, S.Kennou, D.G.Georgiadou, V.Constantoudis, S.Gardelis, T.Lazarides, A.G.Coutsolelos, P.Argitis.

INVITED TALKS AND SEMINARS

Invited talk at Energy Materials Nanotechnology (EMN) Meeting on Optoelectronics 2015 (will be held in Beijing on April 24-27, 2015): *Efficient passivation methods of titanium oxide surface traps for application in optoelectronic devices.*

Invited talk at Energy Materials Nanotechnology (EMN) Meeting on Polymers 2015 (will be held in Orlando, Florida on January 7-10, 2015): *Enhanced Structural Order of Polymer Photovoltaic Devices Deposited on Hydrogenated Metal Oxide Surfaces.*

Invited talk at International Semiconductor Device Research Symposium (ISDRS) 2013, December 11-13, 2013, Washington: *Transition Metal Oxides as Hole/Electron Extraction Interfacial layers in Organic Photovoltaics.*

Invited talk at 10th International Conference on Nanosciences & Nanotechnologies (NN11), July 9-12 2011, Thessaloniki, Greece: *Solution-processed materials for successful interface engineering in bulk heterojunction organic photovoltaics.*

Invited talk at 8th International Conference on Nanosciences & Nanotechnologies (NN11), July 12-15 2011, Thessaloniki, Greece: *Interface engineering in organic optoelectronic devices using polyoxometallate electron transport layers.*

Invited talk at 1st International Conference on Bioinspired Materials for Solar Energy Utilization "BIOSOL2011" Chania, Crete, Greece, 12 -17 September 2011: *Interface engineering in organic optoelectronic devices using porphyrin transport layers.*

Invited Seminar at the 49th Summer School of the National Center for Scientific Research Demokritos Athens, Greece, July 2014: *Organic Optoelectronics for a Brighter Future.*

Invited Seminar at the Department of Materials Science of the University of Patras, Greece, June 2014: *Organic Light Emitting Diodes and Applications.*

Invited Seminar at the Department of Chemistry of the University of Athens, Greece, March 2014: *Organic Optoelectronics.*

Invited Seminar at the Department of Physics of the University of Patras, Greece, June 2014: *Organic Photovoltaics.*

Invited Seminar at the 46th Summer School of the National Center for Scientific Research Demokritos Athens, Greece, July 2011: *Organic/Plastic Electronics.*

Invited Seminar at the 45th Summer School of the National Center for Scientific Research Demokritos Athens, Greece, July 2010: *Organic LEDs: towards cost effective solid state lighting.*

More than 10 other invited lectures in academic/research institutions and in summer schools in Greece in the last 5 years.

ORGANISATION OF CONFERENCES/SCIENTIFIC MEETINGS

International Advisory Committee of Energy Materials Nanotechnology (EMN) Meeting on Optoelectronics 2015 (will be held in Beijing on April 24-27, 2015).

Workshop Chair of EMN Workshop on Optoelectronic Materials and Devices 2015 (will be held in Beijing on April 24-27, 2015).

Session chair, International Semiconductor Device Research Symposium (ISDRS) 2013, December 11-13,

Session chair, Micro&Nano 2010, Athens, Greece, November 19-21, 2010.

OTHER RELEVANT RESEARCH/TEACHING ACTIVITIES

Co-supervisor of 4 postdocs, 6 Ph.D., 15 master and more than 20 undergraduate students at the National Centre for Scientific Research "Demokritos"/Athens/Greece, the Department of Electronics, Technological Institute of Pireaus/Athens/Greece and the University of Athens/Athens/Greece

Reviewer in various academic journals and of research proposals.

RESEARCH PROJECT PARTICIPATION

Project: "NANCAR" (Nanofabrication with chemically amplified resists), Budget: 300.000 Euros, Funding Agency: European Union, Role in project: PHD student, Duration: 1998-2000.

Project: EU ESPRIT Long Term Research, «RESIST 193» (Resists for 193 nm lithography), Budget: 200.000 Euros, Funding Agency: European Union, Role in project: PHD student, Duration: 2000-2003.

Project: EU ESPRIT, Open Long Term Research, «Microprotein», EU GROWTH, Budget: 300.000 Euros, Funding Agency: European Union, Role in project: postdoctoral researcher, Duration: 2005-2007.

Project: "Development of Technology for Colour Tuning of OLEDs" within the framework of Research Grants ARCHIMEDES - II, Budget: 50.000 Euros, Funding: Ministry of Education, Lifelong Learning and Religious Affairs, Greece, Role in project: Member of the Research Team, Duration: 2012-2014.

Project: "Novel low power consumption Hybrid OLEDs with improved operational characteristics" (NHyoLED) within the framework of Research Grants ARCHIMEDES - III, Budget: 100.000 Euros, Funding: Ministry of Education, Lifelong Learning and Religious Affairs, Greece, Role in project: Member of the Research Team, Duration: 2012-2014.

Project: "Novel and highly efficient Hybrid organic photovoltaic cells" (NHyoOPV) within the framework of Research Grants ARCHIMEDES - III, Budget: 100.000 Euros, Funding: Ministry of Education, Lifelong Learning and Religious Affairs, Greece, Role in project: Member of the Research Team, Duration: 2012-2014.

Project: "Polymeric photonic systems for application in information technologies" (PHOTOPOLIS) within the framework of Research Grants THALES, Budget: 600.000 Euros, Funding: Ministry of Education, Lifelong Learning and Religious Affairs, Greece, Role in project: Member of the Research Team, Duration: 2012-2015.

Project: "Plasma directed assembly of nanostructures and applications" (PlasmaNanoFactory) within the framework of Research Grants ARISTEIA, Budget: 370.000 Euros, Funding: Ministry of Education, Lifelong Learning and Religious Affairs, Greece, Role in project: Member of the Research Team, Duration: 2012-2015.

Project: "Implementing advanced interfacial engineering strategies for highly efficient hybrid solar cells" within the framework of Research Grants ARISTEIA II, Budget: 300.000 Euros, Funding: Ministry of Education, Lifelong Learning and Religious Affairs, Greece, Role in project: Member of the Research Team, Duration: 2013-2015.

RESEARCH INTERESTS-10 SELECTED ISI PUBLICATIONS (OF A TOTAL OF 65 PEER-REVIEWED ARTICLES)

My research is focus on the improvement of the interfaces between the active component (e.g., organic semiconductor) and the electrode materials at organic photovoltaics (OPVs), organic light emitting diodes (OLEDs) and, recently, on perovskite solar cells by modifying these interfaces with metallic oxides of various stoichiometries, with molecular oxides, porphyrin compounds, by altering the polarity of the interfaces etc. The main purpose of my work is to achieve high devices efficiencies and environmental stability and to develop of an understanding of the main physical processes that influence devices efficiency and stability, which represents a major challenge in the field of green photovoltaic technologies, in general.

TEN MOST SIGNIFICANT PUBLICATIONS IN INTERNATIONAL SCIENTIFIC JOURNALS (AVAILABLE AT <http://scholar.google.gr/citations?user=KS486UAAAAAJ&hl=el&oi=ao>):

- 1 “Reduction of tungsten oxide: a path towards dual functionality utilization as efficient anode and cathode interfacial layers in Organic Light-Emitting Diodes”, **M Vasilopoulou**, L.C.Palilis, D.G.Georgiadou, A.M.Douvas, P.Argitis, S.Kennou, L. Syggelou, G.Papadimitropoulos, I.Kostis, N.A.Stathopoulos, D.Davazoglou, *Advanced Functional Materials*, Vol. 21, Iss. 8, p. 1489-1497, 2011.
2. “The influence of hydrogenation and oxygen vacancies in molybdenum oxides work function and gap states for application in organic optoelectronics”, **M Vasilopoulou**, A.M.Douvas, D.G.Georgiadou, L.C.Palilis, S.Kennou, L.Syggelou, A.Soultati, I.Kostis, G.Papadimitropoulos, D.Davazoglou, P.Argitis, *Journal of the American Chemical Society*, Vol. 134, p. 16178-16187, 2012.
3. “The effect of surface hydrogenation of metal oxides on the nanomorphology and the charge generation efficiency of polymer blend solar cells”, **M Vasilopoulou**, *Nanoscale* 6 (22), P. 13726-13739, 2014.
4. “Porphyrin oriented self-assembled nanostructures for efficient exciton dissociation in high-performing organic photovoltaics” **M Vasilopoulou**, DG Georgiadou, AM Douvas, A Soultati, V Constantoudis, D Davazoglou, S Gardelis, LC Palilis, M Fakis, S Kennou, T Lazarides, AG Coutsolelos, P Argitis, *Journal of Materials Chemistry A* 2 (1), P. 182-192, 2014.
5. “Atomic-Layer-Deposited Aluminum and Zirconium Oxides for Surface Passivation of TiO₂ in High-Efficiency Organic Photovoltaics”, **M Vasilopoulou**, DG Georgiadou, A Soultati, N Boukos, S Gardelis, Leonidas C Palilis, Mihalis Fakis, Georgios Skoulatakis, Stella Kennou, Martha Botzakaki, Stavroula Georga, Christoforos A Krontiras, Florian Auras, Dina Fattakhova-Rohlfing, Thomas Bein, Theodoros A Papadopoulos, Dimitrios Davazoglou, Panagiotis Argitis, *Advanced Energy Materials* 4 (15), 2014.
6. “Solution-processed hydrogen molybdenum bronzes as highly conducting anode interfacial layers in efficient organic photovoltaics”, A.Soultati, A.M.Douvas, D.G.Georgiadou, L.C.Palilis, T.Bein, J.M.Feckl, S.Gardelis, M.Fakis, S.Kennou, P.Falaras, T.Stergiopoulos, N.A.Stathopoulos,

D.Davazoglou, P.Argitis, **M.Vasilopoulou**, *Advanced Energy Materials*, 2014, DOI:10.1002/aenm.201300896.

7. "Reduced molybdenum oxide as an efficient electron injection layer in polymer light-emitting diodes", **M.Vasilopoulou**, L.C.Palilis, D.G.Georgiadou, P.Argitis, S.Kennou, L.Syggelou, I.Kostis, G.Papadimitropoulos, N.Konofaos, A.A.Iliadis, D.Davazoglou, *Applied Physics Letters*, Vol. 98, Iss. 12, p. 3301-3303, 2011.

8. "A water soluble inorganic molecular oxide as a novel efficient electron injection layer for hybrid light-emitting diodes (HyLEDs)", L.C.Palilis, **M.Vasilopoulou**, D.G.Georgiadou, P.Argitis, *Organic Electronics*, Vol. 11, Iss. 5, p. 887-894, 2010.

9. "Hydrogenated under-stoichiometric tungsten oxide anode interlayers for efficient and stable organic photovoltaics, **M Vasilopoulou**, A Soultati, DG Georgiadou, T Stergiopoulos, LC Palilis, S Kennou, NA Stathopoulos, D Davazoglou, P Argitis", *Journal of Materials Chemistry A* 2 (6), P. 1738-1749, 2014.

10. "Tuning the emitting colour of Organic Light Emitting Diodes through photochemically induced transformations: towards single layer, patterned, full colour displays and white lighting applications», **M. Vasilopoulou**, G. Pistolis, D. Georgiadou and P. Argitis, *Adv. Funct. Mater.*, 17 (17), 2007.

GRANDED PATENTS

1. P. Argitis, M. Vasilopoulou, E. Gogolides, E. Tegou, I. Raptis, "Microlithographic materials and processes based on poly (hydroxyalkyl acrylates)" Greek Patent, no 1003420/1.9.2000.

2.P. Argitis, E. Gogolides, E. Couladouros, V. Vidali, M. Vasilopoulou, G. Cordoyanis, "Polycarbocyclic derivatives for modification of resist optical and Etch resistance properties", Patent Application to Greek Patent Office, No 20010100506, 1/11/2001.

3. P. Argitis, E. Gogolides, E. Couladouros, V. Vidali, M. Vasilopoulou, G. Cordoyanis, "Polycarbocyclic derivatives for modification of resist optical and Etch resistance properties", International (PCT) Patent Application, PCT/EP/02/12284, 30-10-2002.

4.P. Argitis, G. Pistolis and M. Vasilopoulou, "Tuning the emitting color of single layer, patterned full color Organic Light Emitting Diodes" International (PCT) Patent Application 17-6-06.

INVITED BOOK CHAPTER: 1

Semi-Conducting Organic Molecules" in Encyclopedia of Physical Organic Chemistry (editor prof. Zerong DanielWang) to be published in 2015 from Wiley Interscience.