

# CURRICULUM VITAE

## **Dr. Neophytos Neophytou**

Associate Professor

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## Previous Position

### **Post-Doctoral Researcher**

2008 - 2013

Institute for Microelectronics, Technical University of Vienna – TU Wien (group of Prof. Hans Kosina)

Projects: *Thermoelectric performance of low-dimensional materials from atomistic / quantum calculations*

## Current Research Interests

- Theory, computational modelling, and simulation of transport phenomena in nanostructures and devices
- Atomistic and quantum mechanical phenomena at the nanoscale
- Electronic, thermal, and thermoelectric properties of nanodevices and low-dimensional materials
- Advanced materials for energy conversion and generation
- Nanoscale electronic transistor devices for beyond-CMOS technologies (More and More-than Moore)
- *Materials/systems of interest include:* 1D nanowires, 2D ultra thin-body devices, carbon nanotubes, graphene, graphene nanoribbons, quantum dots, nanomaterial networks/clusters, nanomeshes.

## Education

### **Ph.D. in Electrical and Computer Engineering**

2004 - 2008

Microelectronics and Nanotechnology, Purdue University, West Lafayette, Indiana, USA

Supervisors: Prof. Mark S. Lundstrom and Prof. Gerhard Klimeck

Thesis: *“Quantum and Atomistic Effects in Nanoelectronic Transport Devices”*

### **M.S. in Electrical and Computer Engineering (Purdue)**

2002 - 2003

### **B.S. in Electrical and Computer Engineering (Purdue, Graduated with distinction)**

1998 - 2001

## Funding

- **ERC Starting Grant 2015:** *“Advanced Simulation Design of Nanostructured Thermoelectric Materials with Enhanced Power Factors - NANOthermMA”* – € 1,500,000 (project to begin in 2016)
- **FWF Austrian Science Fund**, 2014-2016: *“Efficient Thermoelectrics based on Silicon Nanomeshes - NANOMESH”*, Role: Author and scientific leader of entire proposal and all scientific parts. € 312,826.
- **EU-FP7**, 2011-2014, € 312,826: *“Nanostructured Hi-Performance Thermoelectric Converters - NanoHiTEC”*, Role: Author and scientific leader of the theory Work Package. € 267,000 (total € 3,962,538)
- **FFG Austrian Science Fund**, 2010-2012: *“Advanced Thermoelectric Nanostructures - ATHENS”*, Role: Author and scientific leader of entire proposal and all scientific parts. € 107,811.

## Industrial Experience

### **INTEL Corporation**

- TCAD Group, Hillsboro, OR, USA (*III-V MOSFET design*) 05-08/2007
- TCAD Group, Hillsboro, OR, USA (*Nanoscale transistor design*) 05-08/2006
- Yield and Reliability Group, Albuquerque, NM, USA, (*Software development*) 05-08/2001

### **En' Urga Inc**

- Purdue Research Foundation, Lafayette, IN, USA, (*Multi-frequency data processing*) 05-08/2000

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## **Publications Summary**

59 peer-reviewed journal publications

Published in: Nano Lett., Nanotechnology, Phys. Rev. B, Appl. Phys. Lett., J. Appl. Phys., J. Electr. Materials, IEEE Trans. on Electron Devices, IEEE Trans. on Nanotechnol., IEEE Electron Device Lett., J. Computational Electronics, Solid State Electronics

6 invited papers, in Journal of Computational Electronics, Int. Journal of High Speed Electronics and Systems, European Journal of Physics B

>1350 citations, *h*-index 21 (Google Scholar, March 2016):

<http://scholar.google.co.uk/citations?user=h5ovGKMAAAAJ&hl=en>

70 international conference presentations/proceedings, peer-reviewed (given over 40 talks), including Int. Workshop on Computational Electronics, Int. Conf. on Thermoelectrics, European Conf. on Thermoelectrics, SISPAD, APS March Meetings, Nanotech, IEDM, Nanowires Workshop, CARBOMAT, Int. Conf. on Nanosciences and Nanotechnologies

6 invited talks in international conferences and workshops (2 more as a co-author)

Best conference paper award at IEEE SISPAD, Glasgow, UK, 2013. “Full Band Calculations of Low-field Mobility in *p*-type Silicon Nanowire MOSFETs”;

A complete list is available at: [www.nneophytou.com](http://www.nneophytou.com)

## **Journal Reviewing Activity**

Physical Review Letters, Physical Review B, Applied Physics Letters, Journal of Applied Physics, IEEE Trans. Electron Devices, IEEE Electron Device Letters, IEEE Trans. Nanotechnology, Solid State Electronics, Superlattices and Microstructures, ACS Nano, European Journal of Physics

## **Scientific Software Development**

Co-developer of computational nanotechnology simulation tools uploaded on nanoHUB.org

- “CNTFET Lab” <http://nanohub.org/resources/cntfet>. The first 3D, atomistic, quantum transport simulator for carbon nanotube transistors. Used by over 1600 users, that executed over 170,000 simulations since 2006.
- “Bandstructure Lab” <http://nanohub.org/resources/bandstrlab>. Atomistic simulator for the electronic structure of nanowires, ultra-thin-layers, and bulk semiconductors. Used by over 6000 users, that executed over 90,000 simulations since 2006. (Considered to be *the most famous* scientific code on nanoHUB.org)

## **International Collaboration Partners and Journal Paper Co-Authors**

- *On electronic transport in nanostructures*: Prof. Mark Lundstrom (Purdue Univ.), Prof. Gerhard Klimeck (Purdue Univ.), Prof. Hans Kosina (TU Vienna), Prof. Siegfried Selberherr (TU Vienna), Dr. Titash Rakshit (Intel Corporation), Prof. Shaikh Ahmed (Univ. Southern Illinois), Dr. Abhijeet Paul (GlobalFoundries), Yang Liu (IBM), Prof. Mathieu Luisier (ETH Zurich), Prof. E. Polizzi (Univ. Mass Amherst, USA).
- *On thermoelectricity properties of nanostructures*: Prof. Dario Narducci (Univ. Milano), Prof. Xanthippi Zianni (NCSR ‘Demokritos’, Greece), Dr. Marisol Martin (Inst. Microelectronica Madrid), Dr. Hossein Karamitaheri, (Univ. of Kashan, Iran), Prof. E. Bauer (TU Vienna).
- *On carbon nanotube and graphene electronics*: Dr. Siyu Koswatta (IBM), Prof. Gianluca Fiori (Univ. Pisa), Dr. Diego Kienle (Univ. Bayreuth), Prof. Mani Vaidyanathan (Univ. Alberta), Prof. M. P. Anantram (Univ. Washington), Prof. Gengchiao Liang (Nat. Tech. Univ. Singapore), Dr. Mahdi Pourfath (TU Vienna).

## **Memberships of Scientific Societies**

- American Physical Society (APS)
- IEEE
- Network for Computational Nanotechnology (NCN)

### **Graduate Student Supervision**

- As a faculty member at Univ. of Warwick:  
Samuel Foster, PhD, “*Multi-scale simulations for nanostructured thermoelectrics*” (Expected Grad. 2018)  
Li Zhixiang, MSc, “*Electronic structure design for large thermoelectric performance*” (Exp. Grad. 2016)  
Maryam Iya Abdullahi, MSc, “*Electron Mobility in Low-Dimensional Materials*”(Graduated 2015)
- As a Post-Doctoral Researcher (TU-Wien, 2009-2013) actively involved and co-supervised the thesis of:  
Hossein Karamitaheri, PhD, “*Thermal and Thermoelectric Properties of Nanostructures*” (2010-2013)  
Stefanie Wolf, MSc, “*Monte-Carlo Phonon Ray-Tracing for Thermal Transport Simulations*” (2012-2013)
- As a senior PhD student, actively involved in tutoring of two junior PhD students:  
Yang Liu, PhD (Purdue University, 2005-2007); Abhijeet Paul, PhD (Purdue University, 2006-2008).

### **Undergraduate (UG) Project Supervision**

- Junpeng Lu, “*Phonon Monte Carlo method for nanostructured materials*” (Univ. of Warwick, 2015-2016)
- So Young Kim, “*Electronic structure optimization for thermoelectrics*” (Univ. of Warwick, 2015-2016)
- David Wilders, “*Phonon transport at the nanoscale*” (Univ. of Warwick, 2015)
- Christopher Hughes, “*Heat transport in nanostructures*” (Univ. of Warwick, 2014-2015)
- Yuneng Xu, “*Atomistic geometry constructor*” (Univ. of Warwick, 2014-2015)

### **Teaching (over four years of teaching experience)**

Received the “*Postgraduate Certificate in Academic and Professional Practice (PCAPP)*”, a Master’s degree equivalent for pedagogic development in higher education, University of Warwick, 2016.

Project titles: “The value and practice of formative assessment for effective learning in interdisciplinary physical science education”, “Multi-Skills Approach in Teaching Complex Science Problems”.

- **Lecture courses:** Electronic circuits and devices; Power electronics; Amplifiers; Energy conservations and power systems (module leader); Electromechanical motion devices.
- **Laboratories:** Electronic circuit design; Electrical engineering technological science laboratory - energy efficiency; Electronic Instrumentation – Pulse Width Modulation Techniques; Electronic components.
- **Departmental tutorials:** Mathematics for engineers including calculus, differential equations, linear algebra; Systems; Circuit design; Mechanics; Thermodynamics.

### **Institutional and Scientific Meeting Organizations Responsibilities**

- Faculty member, University of Warwick, Coventry, UK (2013-present).
- Member of Undergraduate Studies Committee of the Board of the Faculty of Science, Univ. of Warwick.
- Member of the Technical Board, *International Workshop on Computational Electronics*, IWCE, 2015.
- Served as president of the student leadership council of the multi-university Network for Computational Nanotechnology (NCN), Purdue University, IN, USA (2007-2008) – hosted lecture series, workshops.

### **Earlier Awards and Distinctions**

- Full 4-year FULBRIGHT Scholarship for undergraduate studies (1998-2002)
- Participation in the International Math Olympiad and the Balkan Math Olympiad (1996)
- Awards in National Math and Physics Competitions held in Cyprus from 1993 through 1996

### **Academic References**

Prof. G. Klimeck, Purdue Univ. ([gekco@purdue.edu](mailto:gekco@purdue.edu)); Prof. M. Lundstrom, Purdue Univ. ([lundstro@purdue.edu](mailto:lundstro@purdue.edu)); Prof. S. Selberherr, TU Wien ([selberherr@iue.tuwien.ac.at](mailto:selberherr@iue.tuwien.ac.at)); Prof. H. Kosina, TU Wien ([kosina@iue.tuwien.ac.at](mailto:kosina@iue.tuwien.ac.at)).