

George Papageorgiou

Date of Birth: 23-01-1978
Place of Birth: Athens, Greece

Address: Institute of Nanoscience and Nanotechnology, NCSR Demokritos
Patr. Gregoriou E & 27 Neapoleos Str, 15341, Agia Paraskevi

Telephone: +30 2106503247
e-mail: g.papageorgiou@inn.demokritos.gr

Education

09/1999 - 03/2004 **Royal Holloway & Bedford New College, University of London**
Ph.D in Physics
Thesis Supervisor: Professor Michael Lea

09/1995 - 06/1999 **Queen Mary & Westfield College, University of London**
Bachelor of Science (B.Sc. Hons)

Research Experience

10/2018 - present Functional Scientific Personnel
06/2014 - 10/2018 Technical Scientific Personnel
NCSR Demokritos, Athens
Institute of Nanoscience and Nanotechnology

Process development engineer and operator of the high resolution, 100kV Electron Beam Lithography (EBL) system EBPG-5000+ (Raith) installed at the clean room facility of Nanotechnology and Microsystems Laboratory (NML).

- Research and development towards the realisation of EBL requests in conjunction with associated pattern transfer techniques
- Lithographic data preparation and proximity effect correction
- Computer assisted design of EBL masks
- Resist process engineering, parametric analysis and modeling
- Grayscale (3D) lithography and pattern transfer modeling
- Lithographic processing of charging substrates (Quartz, Sapphire etc)
- Preparation/dilution of negative and positive tone e-beam resist solutions

- Profilometry, Optical Microscopy, Scanning Electron Microscopy (SEM)
- Clean Room processes (Lift off, wet etching, substrate surface preparation)
- Co-authoring of articles in peer-reviewed journals

02/2002 - 06/2004

**Commissariat a l' Energie Atomique et aux Energies Alternatives (CEA)
Service de Physique de l' Etat Condensé, Saclay, Paris**

Process development and fabrication of novel 6-layer nanoelectronic devices incorporating Single Electron Transistor circuitry, pre- and post- acquisition of doctoral degree, for a total of 9 months. Nature of duties included operation of clean room equipment following technical procedures and safety practices, associated with the following experimental techniques:

- Microfabrication *in situ* (Electron Beam Lithography using a converted SEM / UV lithography)
- Chemical / Oxygen / Reactive Ion Etching, plasma cleaning (ashing)
- Metal-oxide evaporation & sputtering, shadow evaporation (Dolan technique), Lift-off, wire bonding
- Scanning Electron Microscopy for inspection and imaging of fabricated structures
- Computer assisted design and data preparation

09/1999 - 03/2004

**Millikelvin Lab, Royal Holloway & Bedford New College
University of London, Egham, London**

Experimentation in the field of Low Temperature Physics *en route* to doctoral degree. Experimental assessment of the feasibility of creating quantum bits using suspended single electrons on Helium, over microfabricated devices. Thesis entitled ***Counting Electrons on Helium with a Single Electron Tunneling Transistor.***

- Experimental techniques associated to Low Temperature Physics such as the operation of cryostats, helium circulation systems, the use of cryogenic liquids and high vacuum technologies
- Characterisation and operation of Single Electron Transistors at temperatures down to 0.15 K
- Use of laboratory electronics and design, building and reconfiguring of experiments
- Noise filtering
- Data monitoring, acquisition and analysis

Publications (14)

Zisis, G., Papageorgiou, G., Anastasiadis, V., Petrou P., Raptis I., Papanikolaou, N.
Micro and Nano Engineering (*under reviewing*)

3D structured biochip for label free determinations at the Point-of-Need

Geka, G., Papageorgiou, G., Chatzichristidi, M., Karydas, A., Psycharis, V., Makarona, E.
Nanomaterials, 11(3), 1–22, 762 (2021)

Cuo/pmma polymer nanocomposites as novel resist materials for e-beam lithography

Mpatzaka, T., Papageorgiou, G., Papanikolaou, N., Valamontes, E., Ganetsos, Th., Goustouridis, D., Raptis, I., Zisis, G.

Micro and Nano Engineering, 9, 100070 (2020)

In-situ characterization of the development step of high-resolution e-beam resists

Papageorgiou, G.P., Karydas, A.G., Papageorgiou, G., Kantarelou, V., Makarona, E.

Micro and Nano Engineering, 8, 100063 (2020)

Controlled synthesis of periodic arrays of ZnO nanostructures combining e-beam lithography and solution-based processes leveraged by micro X-ray fluorescence spectroscopy

Mpatzaka, T., Zisis, G., Raptis, I., Vamvakas, V., Kaiser, C., Mai, T., Schirmer, M., Gerngroß, M., Papageorgiou, G.

Micro and Nano Engineering, 8, 100065 (2020)

Process study and the lithographic performance of commercially available silsesquioxane based electron sensitive resist Medusa 82

L. Athanasekos, A. Christofi, G. Gantzounis, E. Bolomyti, G. Papageorgiou, M. C. Skoulikidou, I. Raptis and N. Papanikolaou.

Microelectronic Engineering, 159, 42-45 (2016)

Design and fabrication of suspended Si_3N_4 nanobeam cavities.

P. Glasson, G. Papageorgiou, K. Harrabi, V. Antonov, E. Collin, P. Fozooni, P. G. Frayne, M. J. Lea, Y. Mukharsky and D. G. Rees.

Journal of Physics and Chemistry of Solids, 66, 1539-1543 (2005)

Trapping Single electrons on Liquid Helium.

G. Papageorgiou, P. Glasson, K. Harrabi, V. Antonov, E. Collin, P. Fozooni, P. G. Frayne, M. J. Lea, Y. Mukharsky and D. G. Rees.

Applied Physics Letters, 86, (2005) – (cond-mat/0405084)

Counting Individual Trapped Electrons on Liquid Helium.

P. Glasson, E. Collin, P. Fozooni, P. G. Frayne, K. Harrabi, W. Bailey, G. Papageorgiou, Y. Mukharsky and M. J. Lea.

Physica E, 22, 761-766 (2004)

Confined electron crystals and Rydberg states on liquid helium.

G. Papageorgiou, Y. Mukharsky, K. Harrabi, P. Glasson, P. Fozooni, P. G. Frayne, E. Collin, and M. J. Lea. Physica E, 18, 179-181 (2003).

Detecting electrons on helium with a single-electron transistor (SET).

E. Collin, W. Bailey, P. Fozooni, P. G. Frayne, P. Glasson, K. Harrabi, M. J. Lea and G. Papageorgiou.

Physica E, 18, 186-187 (2003).

Microwave saturation and the Rabi frequency of the Rydberg states of electrons on helium.

P.Glasson, V.Dotsenko, P.Fozooni, M.J.Lea, G.Papageorgiou, S.E. Andresen and A. Kristensen.
Physica E, 18, 173-174 (2003).

Observation of dynamical ordering in a confined Wigner crystal.

E.Collin, W.Bailey, P.Fozooni, P.G.Frayne, P.Glasson, K.Harrabi, M.J.Lea and G. Papageorgiou.
Phys. Rev. Lett., 89, 245301 (2002).

Microwave saturation of the Rydberg states of electrons on helium.

P.Glasson, V.Dotsenko, P.Fozooni, M.J.Lea, G.Papageorgiou, S.E. Andresen and A.Kristensen.
Phys. Rev. Lett., 87, 176802 (2001).

Observation of dynamical ordering in a confined Wigner crystal.

Conferences

"AFM tip shape characterization and measurement correction, through the use of e-beam nanopillar standards"

G. Papageorgiou, R. Koops, P. Dimitrakis, V. Constantoudis

MNE 2019

Rhodes, Greece, 23-26 September 2019

"Process Optimization of Medusa 82 resist by EBL"

T. Mpatzaka, G. Zisis, I. Raptis, V. Vamvakas, C. Kaiser, T. Mai, M. Schirmer, M. Gerngroß, G. Papageorgiou

MNE 2019

Rhodes, Greece, 23-26 September 2019

Junctionless Si-Nanowire FET SONOS Memories"

V. Ioannou-Sougleridis, P. Dimitrakis, D. Velessiotis, N. Nikolaou, G. Papageorgiou, N. Boukos, C.A. Dimitriadis, D.H. Tassis, A. Tsormpatzoglou, P. Normand

EUROMAT 2017

Thessaloniki, Greece, 17-22 September 2017

"Counting Electrons on Liquid Helium"

M. J. Lea, P. Glasson, G. Papageorgiou, K. Harrabi, E. Collin, P. Fozooni, P. G. Frayne, W. Bailey, Y. Mukharsky, M. I. Dykman, V. Antonov

SSQIP 2003, Solid State Quantum Information Processing Conference

Amsterdam, Holland, 15-18 December 2003

"Detecting Electrons on Helium with a Single Electron Transistor"

P.H. Glasson, E. Collin, P. Fozooni, P.G. Frayne, K. Harrabi, W. Bailey, G. Papageorgiou, M.J. Lea

Condensed Matter and Material Physics (CMMP) Conference

Queen's University, Belfast, Irland, 6-9 April 2003

“Detecting electrons on helium with a single-electron transistor (SET)”

G. Papageorgiou, Yu. Mukharsky, K. Harrabi, P. Glasson, P. Fozooni, P. G. Frayne, E. Collin and M. J. Lea
23rd International Conference on Low Temperature Physics (LT23)
Hiroshima, Japan, 20-27 August 2002

“Microwave saturation and the Rabi frequency of the Rydberg states of electrons on helium”

G. Papageorgiou, Yu. Mukharsky, K. Harrabi, P. Glasson, P. Fozooni, P. G. Frayne, E. Collin and M. J. Lea
23rd International Conference on Low Temperature Physics (LT23)
Hiroshima, Japan, 20-27 August 2002

“Microwave excitation of the Rydberg states of electrons on helium”

E. Collin, W. Bailey, P. Fozooni, P. G. Frayne, P. Glasson, K. Harrabi, M. J. Lea, G. Papageorgiou
The Annual Low Temperature Group Meeting IoP-2002
London, UK, 28 May 2002

“Microwave excitation of the Rydberg states of electrons on helium”

E. Collin, W. Bailey, P. Fozooni, P. G. Frayne, P. Glasson, K. Harrabi, M. J. Lea, G. Papageorgiou
19th General Conference of the EPS Condensed Matter Division, Condensed Matter and Materials Physics, CMD19 - CMMP 2002
Brighton, UK, 7-11 April 2002

Participation in workshops/meetings

Annual *Vistec* Users Meeting

European Lithography Beamwriter User's Meeting (ELBUM), MNE 2019
Rhodes, Greece, 24 September 2019

"Design & fabrication of 2D/3D Nanometrology reference samples for Mueller Polarimetry and Hybrid Metrology Measurements"

G. Papageorgiou, P. Dimitrakis, V. Constantoudis

EMPIR 15SIB09 3DNano Project Meeting

Physikalisch-Technische Bundesanstalt (PTB), Braunschweig, Germany, 13-14 November 2018

Annual *Vistec* Users Meeting

European Lithography Beamwriter User's Meeting (ELBUM), MNE 2015
TU Delft, The Hague, Netherlands, 21 September 2015

“Detection and control of single electrons on Helium”

P.H. Glasson, E. Collin, P. Fozooni, P.G. Frayne, K. Harrabi, W. Bailey, G. Papageorgiou, M.J. Lea

Speech given while applying for research assistant position

INN (former Institute of Microelectronics), NCSR "Demokritos", Athens, January 2009

“Counting electrons on Helium”

P.H. Glasson, E. Collin, P. Fozooni, P.G. Frayne, K. Harrabi, W. Bailey, G. Papageorgiou, M.J. Lea

EU Research Training Network Meeting on Electrons on Cryogenic Substrates

Grenoble, France, 12 September 2003

“ DC and AC measurements using a superconducting Single Electron Transistor to detect electrons on charged Helium surfaces. Preliminary Results”.

P.H. Glasson, E. Collin, P. Fozooni, P.G. Frayne, K. Harrabi, W. Bailey, Yu. Mukharsky, G. Papageorgiou, M.J. Lea

EU Research Training Network Meeting on Electrons on Cryogenic substrates

Institute Henri Poincaré, Paris, France, December 2002

“Single Electronics, Device Characteristics and Fabrication Process”

E. Collin, W. Bailey, P. Fozooni, P. G. Frayne, P. Glasson, K. Harrabi, M. J. Lea, G. Papageorgiou

EU Research Training Network Meeting on Electrons on Cryogenic substrates

Royal Holloway University, London, UK, 21-22 June 2002

“Writing Q-bits using microwave Rabi oscillations”

E. Collin, W. Bailey, P. Fozooni, P. G. Frayne, P. Glasson, K. Harrabi, M. J. Lea, G. Papageorgiou

EU Research Training Network Meeting on Electrons on Cryogenic substrates

Royal Holloway University, London, UK, 21-22 June 2002

“Microwave excitation of the Rydberg states of electrons on helium”

E. Collin, W. Bailey, P. Fozooni, P. G. Frayne, P. Glasson, K. Harrabi, M. J. Lea, G. Papageorgiou

EU Research Training Network Meeting on Electrons on Cryogenic substrates

Royal Holloway University, London, UK, 21-22 June 2002

“Rydberg states of electrons on helium”

P.G. Frayne, P. Fozooni, W. Bailey, G. Papageorgiou, P.H. Glasson, M.J. Lea

EU Research Training Network Meeting on Electrons on Cryogenic substrates

University of Konstanz, Konstanz, Germany, 21- 27July 2001