Georgia Theano Papadakis

ICFO - The Institute of Photonic Sciences
Mediterranean Technology Park
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Nationality: U.S. and Greek

Current position

Group leader 7/2021
Institute of Photonic Sciences (ICFO) | *Spain*

Research areas: Thermal radiation control and energy, mid-IR photonics, thermophotovoltaic systems
Supported by: NEST program, Fundacio Privada CELLEX

Education & Research Experience

TomKat Postdoctoral Fellow in Sustainable Energy 4/2018-3/2021
Stanford University | *San Francisco, California, USA*

Postdoctoral advisor: **Shanhui Fan**

PhD - Applied Physics 10/2012-2/2018
California Institute of Technology | *Los Angeles, California, USA*
"Optical response in planar heterostructures: From artificial magnetism to Angstrom-scale metamaterials"
PhD thesis advisor: **Harry A. Atwater**
Thesis committee: Kerry J. Vahala, Andrei Faraon, Chiara Daraio, Keith C. Schwab

Associate Researcher (part-time during doctoral studies) 10/2016-2/2018
Northrop Grumman Corporation | *Redondo Beach, California, USA*
NG NEXT (Division of Fundamental Research), Section of Materials & Devices

Visiting Student Researcher (during doctoral studies) 9-10/2014
FOM Institute AMOLF | *Amsterdam, Netherlands*

Supervisor: Albert Polman, Photonic Materials Group

Master of Science - Applied Physics 10/2012-10/2014
California Institute of Technology | *USA*

Technical Student Fellow 11/2011-7/2012
European Organization for Nuclear Research (CERN) | *Geneva, Switzerland*

Supervisor: Suitbert Ramberger, BE-RF Department
Research activities: metrology and simulations for RF cavity tuning for Linac4

Master of Science - Electrical and Computer Engineering 9/2010-6/2011

National Technical University of Athens | Greece

Master thesis: *"Study of Broadband Plasmonic Structures for Datacom Applications"*

Thesis advisor: H. A. Avramopoulos, Photonics Communications Research Laboratory

Summer Student Fellow 7-9/2010

European Organization for Nuclear Research (CERN) | Geneva, Switzerland

Supervisors: Dr. Javier Serrano, Dr. Juan David Gonzalez Coba, BE-CO Department

Research activities: Digital signal processing, noise and distortion chamber measurements

Bachelor of Science - Electrical and Computer Engineering 2006-2010

National Technical University of Athens | Greece

Majors: Telecommunications & Networks, Microelectronics

Minors: Physics and Medical Engineering

Fellowships & Grants

Proyectos Estratégicos a la Transición Ecológica y a la Transición Digital 2022-2024

Exploring Material Anisotropy and Nonceprocity for Thermal Management (MAnNon)

Funding Agency: Ministerio de Ciencia, Innovacion y Universidades (ES)

Amount granted: 138,000.00 euros

Institute of Photonic Sciences - ICFO (Spain)

National Plan of Scientific Research and Innovation 2022-2025

Directional and Near-Field Radiant Heat for Energy (DiNFEn)

Funding Agency: Ministerio de Ciencia, Innovacion y Universidades (Spain)

Amount granted: 72,600.00 euros

Institute of Photonic Sciences - ICFO (Spain)

Ayudas científica de los grupos de investigación de Cataluña 2022-2024

SGR GRC Quantum nano-optoelectronics

Funding Agency: Generalitat de Catalunya (Spain)

Amount granted: 60,000.00 euros

Joint with Frank Koppens

Institute of Photonic Sciences - ICFO (Spain)

La Caixa Postdoctoral Junior Leader Fellowship 2021-2024

From Heat to Light and Energy

Funding Agency: La Caixa Foundation (Spain), EU's Horizon 2020 Marie Sklodowska-Curie Agreement No 847648

Institute of Photonic Sciences - ICFO (Spain)

Princeton Pathway into the Academy Program 2019-2020
Princeton University (USA)

TomKat Postdoctoral Fellowship in Sustainable Energy 2018-2020
Stanford University (USA)
Host: Shanhui Fan, Stanford University

Marie Sklodowska-Curie Individual European Postdoctoral Fellowship 2018-2020
Metabeyond (795249)
Maximum amount granted (183,454.80 euros), top 7% (award not accepted)
King's College London (UK)
Host: Anatoly Zayats, King's College

Breakthrough Starshot seed grant 2016
For research on ultra-lightweight photonic materials for lightsail propulsion
Funded by Breakthrough Initiatives
In collaboration with P. Narang (Harvard), N. Engheta (UPENN), M. Soljačić (MIT)
NG NEXT (Northrop Grumman Corp.) (USA)

PhD Dissertation Fellowship 2016-2017
American Association for University Women (AAUW) distinguished award
California Institute of Technology (USA)

Graduate Research Fellowship 2013-2016
National Science Foundation (NSF) Graduate Research Fellowship
California Institute of Technology (USA)

Summer Student Fellowship 7-9/2010
European Organization for Nuclear Research (CERN) Summer Student Fellowship

Conference Awards

Best Early Career Presentation 2023
The 14th World Conference on Thermophotovoltaic Generation | Online
"Near-field Thermophotovoltaics: The route to High V_{oc}", G. T. Papadakis

Best Student Paper, Metamaterials 2016 10th International Congress 2016
Metamaterials' 2016 | Chania (Greece)
"Broadband Non-Unity Magnetic Permeability in Planar Hyperbolic Metamaterials", G. T. Papadakis & H. A. Atwater

Outstanding Poster Award, Metamaterials Science & Technology Workshop 2015
Center for Metamaterials & Integrated Plasmonics | University of California San Diego (USA)
"Tunable graphene-based hyperbolic metamaterial", G. T. Papadakis, Philip W. Hon, Luke A. Sweatlock, P. Yeh & H. A. Atwater *et al.*

Best Poster Award, Spring Material Research Society (MRS) Meeting 2014
Symp. II-Emerging Nanophotonic Materials & Devices | San Franscisco (USA)
"Field effect frequency-tunable epsilon-near-zero metamaterial in the visible", G. T. Papadakis, H. W. Lee, H. A. Atwater

Publications

M. Giteau, M. F. Picardi, G. T. Papadakis , "*Thermodynamic figure of merit for thermophotovoltaics", submitted for publication in JPE. We also thank the reviewers for evaluating our work and for providing us*" Perspective Article Journal of Physics for Energy (2024)

M. Sarkar, M. T. Enders, M. Shokooh-Saremi, K. Watanabe, T. Taniguchi, H. H. Sheinfux, F. Koppens, G. T. Papadakis , "*Retrieving optical parameters of emerging van der Waals flakes*" arxiv:2305.13994 (2023)

K. N. Nimje, M. Giteau, G. T. Papadakis , "*Hot-carrier thermophotovoltaic systems*" arxiv:2311.04795 (2023)

M. T. Enders, M. Sarkar, M. Giteau, A. Deeva, H. H. Sheinfux, M. Shokooh-Saremi, F. Koppens, G. T. Papadakis , "*Deep-subwavelength Phase Retarders at Mid-Infrared Frequencieswith van der Waals Flakes*" arxiv:2306.16110 (Accepted in Communications Materials) (2024)

M. Shokooh-Saremi, M. Giteau, M. Sarkar, G. T. Papadakis , "*Design of narrowband infrared emitters by hybridizing guided-mode resonance structures with van der Waals materials*" Optical Materials 148, 114845 (2024)

M. Sarkar, M. Giteau, M. T. Enders, G. T. Papadakis , "*Lithography-free directional control of thermal emission* " Nanophotonics 10, 0595 (2024)

M. Giteau, M. F. Picardi, G. T. Papadakis , "*Thermodynamic performance bounds for radiative heat engines* " Phys. Rev. Applied 20, L061003 (2023)

L. Wang, F. Javier Garcia de Abajo, G. T. Papadakis , "*Maximal violation of Kirchhoff's law in planar heterostructures* " Phys. Rev. Research 5, L022051 (2023)

M. Giteau, G. T. Papadakis , "*Design rules for active control of narrowband thermal emission using phase-change materials*" Phys. Rev. Applied 19, L051002 (2023)

M. F. Picardi, K. N. Nimje, G. T. Papadakis , "*Dynamic modulation of thermal emission - A Tutorial*" J. Appl. Phys. 133, 111101, Special Collection Recognizing Women in Applied Physics (2023)

M. Pacale, M. Giteau, G. T. Papadakis , "*Perspective on near-field radiative heat transfer*" Appl. Phys. Lett. 122, 100501 (2023)

M. Pacale, G. T. Papadakis , "*Tight bounds and the role of optical loss in polariton-mediated near-field heat transfer*" Phys. Rev. Applied 19, 034013 (2023)

Y. Xiao, M. A. Kats, J. J. Greffet, G. T. Papadakis , "*Materials and Devices for Engineering of Thermal Light: feature issue introduction*" Opt. Materials Express 12, 4, 1450, Special Issue on

Thermal Light (2022)

G. T. Papadakis, M. Orenstein, E. Yablonovitch & S. Fan , "*Thermodynamics of light management in near-field thermophotovoltaics*" Phys. Rev. Applied 16, 064063, Collection on Photovoltaic Energy Conversion (2021)

G. T. Papadakis, C. Ciccarino, L. Fan, P. Narang & S. Fan , "*Deep subwavelength thermal switch via resonant mode coupling in monolayer hexagonal boron nitride*" Phys. Rev. Applied 15, 054002 (2021)

A. M. Morsy, M. T. Barako, V. Jankovic, V. D. Wheeler, M. Knight, G. T. Papadakis, L. A. Sweatlock, P. W. C. Hon & M. L. Povinelli , "*Experimental Demonstration of Dynamic Thermal Regulation using Vanadium Dioxide Thin Films*" Scientific Reports 10, 13694 (2020)

S. Buddhiraju, A. Song, G. T. Papadakis & S. Fan , "*Nonreciprocal metamaterial obeying time-reversal symmetry*" Phys. Rev. Lett. 124, 257403 (2020)

L. Fan, Y. Guo, G. T. Papadakis, B. Zhao, Z. Zhao, S. Buddhiraju, M. Orenstein & S. Fan , "*Nonreciprocal radiative heat transfer between two planar bodies*" Phys. Rev. B 101, 085407 (2020)

G. T. Papadakis, S. Buddhiraju, Z. Zhao & S. Fan , "*Broadening near-field emission for performance enhancement in thermophotovoltaics*" Nano Letters 20, 3, 1654-1661 (2020)

J. Brouillet, G. T. Papadakis & H. A. Atwater , "*Experimental demonstration of tunable graphene-polaritonic hyperbolic metamaterial*" Optics Express 27, 30225 (2019)

G. T. Papadakis, B. Zhao, S. Buddhiraju & S. Fan , "*Gate-tunable near-field heat transfer*" ACS Photonics 6, 709 (2019)

G. T. Papadakis, A. Davoyan, P. Yeh & H. A. Atwater , "*Mimicking surface polaritons for unpolarized light with high-permittivity materials*" Phys. Rev. Materials 3, 015202 [*Editors' Suggestion] (2019)

G. T. Papadakis, D. Fleischman, A. Davoyan, P. Yeh & H. A. Atwater , "*Optical Magnetism in Planar Metamaterial Heterostructures*" Nature Communications 9, 296 (2018)

G. T. Papadakis, P. Narang, R. Sundararaman, N. Rivera, H. Buljan, N. Engheta & M. Soljacic , "*Ultra-light Å-scale Optimal Optical Reflectors*" ACS Photonics 5, 384 (2018)

G. T. Papadakis & H. A. Atwater , "*Field effect-induced tunability in hyperbolic metamaterials*" Phys. Rev. B 92, 184101 (2015)

G. T. Papadakis, P. Yeh & H. A. Atwater , "*Retrieval of material parameters for uniaxial metamaterials*" Phys. Rev. B 91, 155406 (2015)

H. W. Lee, G. T. Papadakis, S. P. Burgos, K. Chander, A. Kriesch, R. Pala, U. Peschel & H. A. Atwater , "*Nanoscale Conducting Oxide PlasMOStor*" Nano Letters 14, 11, 6463-6468 (2014)

Patents

Nanoscale plasmonic field-effect modulator 1/2018

Patent no. US 9,864,109 B2
H. W. Lee, Stanley Burgos, G. T. Papadakis, H. A. Atwater
California Institute of Technology

Meta-Structure and tunable optical device 12/2017

Patent no. US 9,851,589 B2
S. Han, Y-W. Huang, G. T. Papadakis, H. A. Atwater
California Institute of Technology, Samsung Advanced Institute of Technology

Extreme, broadband tunable values of birefringence and dichroism and tunable optical band-gaps 2016

Patent no. US 20170045759 A1
G. T. Papadakis, S. Han, H. A. Atwater
California Institute of Technology, Samsung Advanced Institute of Technology

Nanoscale Plasmonic Field-Effect Modulator 11/2015

Patent no. US 20170059894 A1
H. W. Lee, S. P. Burgos, G. T. Papadakis, H. A. Atwater
California Institute of Technology

Invited Talks

Frontiers in Plasmonics and Nano-Photonics (NANOPLAM) 06/2024
Talk, TBD
Talk | Cetraro, Italy

Nanolight 02/2024
"Thermal photonics with low-dimensional materials"
Talk | Benasque, Spain

Fall MRS 12/2023
Thermal Photonics with Low-Dimensional Materials
Talk | Boston, USA
Symposium: EL06.10 Metamaterials Innovation in Photonics and Thermal Sciences

Metamaterials 2023 09/2023
"Mid-IR and Thermal Photonics with Emerging Low-dimensional Materials"
Talk | Chania, Greece
Session: Thermal effects and metadevices

SPIE Optics+Photonics 08/2023
"Emerging low-dimensional and phase-change materials for thermal photonics"
Talk | San Diego, USA
Session: Active Photonic Platforms

SPIE Metamaterials Conference 08/2023
"Leveraging materials anisotropy for polarization and chirality control"
Talk | San Diego, USA

META '2023 7/2023
Harnessing the properties of emerging low-dimensional and phase-change materials for mid-IR photonics
Talk | Paris, France
Session: Advanced Passive and Active Metasurfaces and Zero-Index Materials

Nanophotonics and its applications for society (EPFL) 7/2023

"Thermal photonics "

Talk & Lecture | EPFL, Lausanne, Switzerland

Spanish Conference on Nanophotonics 6/2023

"Thermal photonics with emerging materials "

Talk | Zaragoza, Spain

The 9th International Conference on Antennas and Electromagnetic Systems 6/2023

"Thermodynamic limits for radiative heat engines"

Talk | Torremolinos, Spain

The 14th World Conference on Thermophotovoltaic Generation 5/2023

"Near-field Thermophotovoltaics: The route to High V_{oc}"

Talk | Online

Institute of Materials Science of Barcelona (ICMAB) 03/2023

"Thermal Photonics with emerging materials"

Colloquium | Barcelona, Spain

The Foremost Nanophotonics 10/2021

"Thermal emission in the far-field and near-field"

Talk | Erice Italy

SPIE Optics+Photonics 08/2022

"Thermal Photonics with Low-Dimensional Materials"

Talk | PSan Diego, USA

Session: Hyperbolic Metamaterials

Ludwig-Maximilians-Universität München (LMU) 06/2021

"Thermal Photonics and Thermophotovoltaics"

Colloquium | Munich, Germany

Nanolight 03/2021

Colloquium, "Thermodynamics of light management in near-field thermophotovoltaics"

Talk | Benasque, Spain

Fall MRS 12/2021

Key opportunities in near-field thermophotovoltaics

Talk | Boston, USA

Symposium: EN10 Advanced materials for thermal energy management and harvesting

Frontiers in Light: Photons for greeen energy 10/2021

Key opportunities in nanoscale thermophotovoltaic systems

Tutorial | Barcelona, Spain

Institute for Scientific and Technological Research of San Luis Potosi (IPICYT) 10/2021

Thermal photonics and heat-to-energy conversion: the power of the near-field

Colloquium, IPICYT, Dept. of Materials Science and Nanotechnology | Mexico

Metamaterials 2021 9/2021

Light management in near-field thermophotovoltaics

Talk | New York, NY

Session: Photodetection and Light Management

EOS Annual Meeting 9/2021

Key opportunities in near-field thermophotovoltaics

Talk | Rome, Italy

Session: Thermal radiation and energy management

Fundacio Catalunya-La Pedrera Ignacio Cirac Program 8/2021

Thermal Photonics and Thermophotovoltaics: the Power of the Near-Field

Summer Lecture, ICFO | Barcelona, Spain

META '2021 7/2021

Active tuning of thermal radiation in the far-field and near-field range with emerging low-dimensional materials

Talk | Warsaw, Poland

Session SP13. Light-matter interactions in new materials and meta-architectures

Barcelona Institute of Science and Technology (BIST) 11/2020

Seminar in advanced research, "From heat to light and energy"

Seminar | Barcelona, Spain

TomKat Center for Sustainable Energy 5/2020

"Broadening near-field emission for performance enhancement in thermophotovoltaics"

Seminar, TomKat Center | Stanford, CA

Photonics at Thermodynamic Limits Energy Frontier Research Center 4/2020

"Broadening near-field emission for performance enhancement in thermophotovoltaics"

Postdoc tutorial, Stanford University | Stanford, CA

SPIE Photonics West 1/2020

"Tunable graphene-based hyperbolic metamaterials: experimental demonstration and beyond"

Session: Hyperbolic Metamaterials | San Francisco, USA

Dartmouth College 1/2020

Jones Seminar on Science, Technology, and Society, "Tailoring the flow of light and radiant heat"

Thayer School of Engineering | Hanover, USA

Boston College 1/2020

Colloquium, "Tailoring the flow of light and radiant heat"

Dept. of Physics | Boston, USA

Photonics at Thermodynamic Limits Energy Frontier Research Center 7/2019

Postdoc tutorial, "Near-field heat transfer for thermophotovoltaics and thermal radiation tuning"

Stanford University | Stanford, USA

Stanford University 4/2019

"Tailoring optical and thermal properties with nanophotonics"

Seminar, Dept. of Applied Mathematics | Stanford, USA

Wesleyan University 3/2019

"Tailoring optical and thermal properties with nanophotonics

Colloquium, Dept. of Physics | Middletown, USA

NG NEXT (Northrop Grumman Corp.) 12/2018

"Gate-tunable near-field heat transfer"

Seminar, Section of Materials & Devices, Dept. of Nanophotonics | Redondo Beach, USA

TomKat Center for Sustainable Energy 11/2018

"Nanophotonic design for near-field heat transfer"

Seminar, TomKat Center | Stanford, USA

FOM Institute AMOLF 8/2017

"Magnetic effects, active tunability and supermetals with planar metamaterials"

Seminar, AMOLF Nanophotonics Groups | Amsterdam, Netherlands

MIT Lincoln Laboratory 7/2017

"Magnetic effects, active tunability and supermetals with planar metamaterials"

Seminar, Group of chemical, microsystem and nanoscale technologies | Boston, USA

Intel Corporation 6/2017

"Magnetic effects, active tunability and supermetals with planar metamaterials"
Seminar, Non-Volatile Solutions Memory Group (Intel) | Boise, USA

NG NEXT (Northrop Grumman Corp.) 12/2016
"Ultra-high reflection with graphene-based Van der Waals heterostructures"
Seminar, Section of Materials & Devices, Dept. of Condensed matter | Redondo Beach, USA

Quantum Metaphotonics & Metamaterials MURI Review 11/2016
"Optical magnetism in metallo-dielectric metamaterials"
Student Highlight Talk, Basic Research Innovation and Collaboration Center | Arlington DC, USA

Foundation for Research and Technology Hellas (FORTH) 9/2016
"Layered optical metamaterials: effective parameters, magnetic effects and active tunability"
Seminar, Institute of Electronic Structure & Laser (IESL) | Heraclion, Greece

NG NEXT (Northrop Grumman Corp.) 4/2016
"Metamaterials parameter retrievals, active tunability and new magnetic effects in hyperbolic media"
Seminar, Section of Materials & Devices, Dept. of Condensed matter | Redondo Beach, USA

NG NEXT (Northrop Grumman Corp.) 9/2015
"Tunable hyperbolic metamaterials at visible and infrared frequencies"
Seminar, Section of Materials & Devices, Dept. of Nanophotonics | Redondo Beach, USA

Synergistic Activities

Guest Editor in ACS Photonics 2024
Special issue on Photonics for Energy

Guest Editor in Journal of Photonics for Energy 2024
Special issue on Thermophotovoltaic Systems

Program Committee Co-Organizer TPV-15 10/2024
15th World Conference on Thermophotovoltaic Generation
Madrid, Spain

Conference Session Co-Organizer and Chair FALL MRS 12/2023
Symposium: SF05 Infrared Materials and Devices for Thermal Radiation Control
Boston, MA

Editorial Board of Journal for Photonics for Energy 2023

Editorial Board of Advanced Photonics Nexus (SPIE/CLP) 2022

Metamaterials 2023 Awards Committee 2023

Program Committee Co-Organizer TPV-13 4/2022
Advances in thermophotovoltaics: materials, devices and systems
Miyazaki, Japan

Conference Session Co-Organizer and Chair FALL MRS 12/2021
Symposium: Infrared and Thermal Photonic Materials and their Applications
Boston, MA

Guest Editor in Optical Materials Express 2021
Special issue: "Materials and Devices for Engineering of Thermal Light"

Workshop Co-Organizer 10/2021
"Frontiers in Light: Photons for green energy".
Participants: ICFO, Stanford University, University of Toronto
Barcelona, Spain

Special Event Organizer CLEO 5/2021
"Discussion of Seminal Papers" with Eli Yablonovitch
San Jose, CA

Special Symposium Organizer CLEO 5/2021
Symposium: Thermal radiation control and energy
San Jose, CA

Session Chair CLEO 5/2021
Symposium: THz and Infrared Photonics
San Jose, CA

Executive Committee Member OSA 2020
Photonic Metamaterials Technical Group

Conference Committee Member CLEO 2021-2024
Symposium: S&I 6 Optical Materials, Fabrication and Characterization
San Jose, CA

Advisor Committee for DARPA JUMP 2017
Center 1 - RF to THz sensors and communication systems
Center 6 - Advanced devices, packaging and materials
Serving as an associate researcher at NG NEXT (Northrop Grumman Corp.)

Peer reviewer since 2015
For the journals Physical Review Letters, Nature Communications, Physical Review Applied, Physical Review B, Physical Review A, Physical Review Materials, ACS Photonics, Applied Physics Letters, Optics Communications, Optical Materials Express, Journal of European Optical Society - Rapid Communications (Springer Open)

Workshop & Meeting Chair

- "From THz to Optics" Metamaterials" 2016 10th International Doctoral School | Chania, Greece, 2016
- "Physics of Light-Matter Interactions & Excited States Dynamics" Workshop, NG NEXT, Northrop Grumman Corp. | CA, USA, 2016

Lectures at ICFO

- Kenneth Burch (Boston College) | 6/2024
- Benjamin Vest (CNRS, France) | 1/2024
- Shanhui Fan (Stanford, USA) | 6/2023
- Alejandro Datas (Universidad Politécnica de Madrid, Spain) | 6/2022

Mentorship

Kartika Nimje - ICFO Mobility Grant 2024
Supervisor: Georgia T. Papadakis (ICFO)
Secondment supervisor: Alejandro Rodriguez (Princeton)

Onasis Lectures 2024
Students: Michael T. Enders, Kartika Nimje, Aleksandra Deeva, Vera Moerbeek

Kartika Nimje - Best Poster Presentation 2023
The 14th World Conference on Thermophotovoltaic Generation
"Hot-carrier thermophotovoltaics", K. Nimje, M. Giteau, G. T. Papadakis

Dr. Michela Picardi - la Caixa Junior Leader Fellowship 2023
Supervisor: Georgia T. Papadakis (ICFO)
Secondment supervisor: Shanhui Fan (Stanford)

Dr. Michela Picardi - Best Talk Award 2023
The 9th International Conference on Antennas and Electromagnetic Systems
"Thermodynamic limits for radiative heat engines", M. Picardi, M. Giteau, G. T. Papadakis

Dr. Michela Picardi - Optica Foundation Challenge 2023
Supervisor: Georgia T. Papadakis (ICFO)

Doctoral Theses Committees

Thesis committee - Dr. Pablo Alonzo Gonzalez (Universidad de Oviedo) 2024
"Fundamentals of nano-optics in hyperbolic van der Waals materials"
Asturias, Spain

Thesis committee - Dr. Julien Legendre (Université de Lyon) 2023
"Theoretical and numerical analysis of near-field thermophotonic energy harvesters"
Lyon, France

Thesis committee - Dr. Ipsita Das (Ludwig-Maximilians-Universität München) 2023
"Investigation of the Interaction Driven Quantum Phases in Magic-Angle Twisted Bilayer Graphene"
Lyon, France

Thesis committee - Dr. Pablo de Roque (ICFO) 2022
"Contributions to nanophotonics: linear, nonlinear and quantum phenomena"
Barcelona, Spain

Thesis committee - Dr. Niels Hesp (ICFO) 2021
"Exploring Twisted Bilayer Graphene with Nano-Optics"
Barcelona, Spain

International Conference Presentations

1. **International Society for Optics and Photonics SPIE** | San Diego, CA, USA 8/2019

   Oral Presentation | Session: Tunable and Dynamic Photonic Platforms XI
   "*Gate-tunable near-field heat transfer*", G. T. Papadakis, B. Zhao, S. Buddhiraju, S. Fan

2. **American Physical Society March Meeting** | Los Angeles, CA, USA 3/2018

   Oral Presentation | Session: Nanostructures and Metamaterials
   "*Phonons and excitons for omnipolarization surface waves*", G. T. Papadakis, A. Davoyan, P. Yeh, H. A. Atwater

3. **CLEO Laser Science to Photonic Applications** | San Jose, CA, USA 5/2017

   Oral Presentation | Session: Fundamental Science - Nonlinear and Hyperbolic Metamaterials
   "*Artificial magnetism in one-dimensional multilayer metamaterials*", G. T. Papadakis, D. Fleischman, A. Davoyan, P. Yeh, H. A. Atwater

4. **Metamaterials' 2016 10th International Congress** | Chania, Greece 9/2016

   Oral Presentation | Session: Hyperbolic Metamaterials
   "*Non-Unity Magnetic Permeability in Planar Hyperbolic Metamaterials*", G. T. Papadakis & H. A. Atwater

5. **Plasmonics Gordon conference** | Newry, ME, USA 7/2016

   Poster Presentation
   "*Broadband non-unity magnetic permeability in planar hyperbolic metamaterials*", G. T. Papadakis, D. Fleischman, A. Davoyan, P. Yeh, H. A. Atwater

6. **American Physical Society March Meeting** | Baltimore, MA, USA 3/2016

   Oral Presentation | Session: Acoustic, Thermal and Photonic Metamaterial Concepts
   "*Broadband non-unity magnetic permeability in planar hyperbolic metamaterials*", G. T. Papadakis, D. Fleischman, A. Davoyan, P. Yeh, H. A. Atwater

7. **Material Research Society (MRS), Fall Meeting** | Boston, MA, USA 11/2015

Oral Presentation | Symposium: Emerging Materials and Platforms for Optoelectronics
"*Tunable Hyperbolic Metamaterials Based on Multilayer Graphene/Dielectric Structures*", G. T. Papadakis, M. C. Sherrott, Philip W. Hon,Luke A. Sweatlock, P. Yeh & H. A. Atwater

8. **Meta'15** | New York, NY, USA 8/2015

   Poster Presentation
   "*Hyperbolic-gap-hyperbolic tunable band structure metamaterials*", G. T. Papadakis, K. Thyagarajan, H. A. Atwater

9. **Metamaterials Science & Technology Workshop, Center for Metamaterials & Integrated Plasmonics** | University of California San Diego, CA, USA 7/2015

   Poster Presentation
   "*Tunable graphene-based hyperbolic metamaterial*", G. T. Papadakis, M. C. Sherrott, Wei-Hsiang Lin, Philip W. Hon,Luke A. Sweatlock, P. Yeh & H. A. Atwater

10. **Surface Plasmon Polariton (SPP) 7** | Jerusalem, Israel 6/2015

    Oral Presentation | Session: Nanoantennas and Hyperbolic Metamaterials
    "*Hyperbolic Metamaterial with Field-Effect Induced Transitions of the Dispersion Surface*", G. T. Papadakis, K. Thyagarajan, H. W. Lee, H. A. Atwater

11. **Surface Plasmon Polariton (SPP) 7** | Jerusalem, Israel 6/2015

    Poster Presentation
    "*Gate-Tunable Conducting Oxide Metasurfaces*", Y-W. Huang, H. W. Lee, R. Sokhoyan, K. Thyagarajan, G. T. Papadakis, S. Han, D. P. Tsai, H. A. Atwater

12. **Material Research Society (MRS), Fall Meeting** | Boston, MA, USA 12/2014

    Oral Presentation | Symposium: Optical Metamaterials and Novel Optical Phenomena Based on Nanofabricated Structures
    "*Field-effect tuning of the optical band gap of hyperbolic metamaterials*", G. T. Papadakis, H. W. Lee, P. Yeh & H. A. Atwater

13. **Julius Springer Forum on Applied Physics** | Amsterdam, Netherlands 9/2014

    Poster Presentation
    "*Field effect frequency- tunable epsilon-near-zero metamaterial in the visible*", G. T. Papadakis, L. A. Sweatlock, H. W. Lee, H. A. Atwater

14. **International Society for Optics and Photonics SPIE** | San Diego, CA, USA 8/2014

    Poster Presentation
    "*Field effect frequency- tunable epsilon-near-zero metamaterial in the visible*", G. T. Papadakis, L. A. Sweatlock, H. W. Lee, H. A. Atwater

15. **International Society for Optics and Photonics SPIE** | San Diego, CA, USA 8/2014

    Poster Presentation
    "*Spontaneous Emission Dynamics of Quantum Emitters Coupled to Epsilon-Near-Zero Metamaterials*", R. Sokhoyan, G. T. Papadakis, H. W. Lee, H. A. Atwater

16. **Plasmonics Gordon conference** | Newry, ME, USA 7/2014

    Poster Presentation
    "*Field effect frequency-tunable epsilon-near- zero metamaterial in the visible*", G. T. Papadakis, H. W. Lee, H. A. Atwater

17. **Material Research Society (MRS), Spring Meeting** | San Fransisco, CA, USA 4/2014

    Poster Presentation | Symposium: II-Emerging Nanophotonic Materials & Devices
    "*Field-effect tuning of the optical band gap of hyperbolic metamaterials*", G. T. Papadakis, H. W. Lee, H. A. Atwater

Other contributions

18. **Nanolight** | Benasque, Spain 3/2016

    "*Dynamic Control of Mid-IR Light via Graphene-Based Structures*", M. C. Sherrott, G. T. Papadakis, P. W. Hon, L. A. Sweatlock, P. Yeh & H. A. Atwater

19. **Frontiers in Nanophotonics** | Zurich, Switzerland 9/2015

    "*Tunable metasurfaces using the field-effect*", Y. W. Huang, H. W. Lee, R. Sokhoyan, K. Tyagarajan, G. T. Papadakis, S. Han, R. Saive, D. P. Tsai, H. A. Atwater

20. **Meta'15** | New York, NY, USA 8/2015

    Keynote talk
    "*Electronically Tunable Metamaterials*", H. A. Atwater, G. T. Papadakis, M. C. Sherrott, V. W. Brar, M. S. Jang, S. Kim, L. Kim, M. Choi, L. A. Sweatlock

21. **Meta'15** | New York, NY, USA 8/2015

    Invited Oral Presentation
    "*Gate-tunable conducting oxide metasurfaces*", Y-W. Huang, H. W. Lee, R. Sokhoyan, K. Thyagarajan, S. Han, G. T. Papadakis, D. P. Tsai, H. A. Atwater

22. **Surface Plasmon Polariton (SPP) 7** | Jerusalem, Israel 6/2015

    Poster Presentation
    "*Graphene/SiO_2 Multilayer Stack as a Hyperbolic Metamaterial*", M. C. Sherrott, G. T. Papadakis, W-S. Lin, P. W. Hon, L. A. Sweatlock, H. A. Atwater

23. **Material Research Society (MRS), Fall Meeting** | Boston, MA, USA 12/2014

    Oral Presentation
    "*Gate-Tunable Conducting Oxide Plasmonic Lightwave Circuits: Modulators and Multistate Logic in Guided Wave Networks*", H. W. Lee, G. T. Papadakis, A. Kriesch, S. P. Burgos, K. Chander, U. Peschel, H. A. Atwater

24. **Surface Plasmon Polariton (SPP) 6** | Ottawa, Canada 5/2013

    Poster Presentation
    "*Nanoscale conducting oxide plasmonic slot waveguide modulator*", H. W. Lee, S. P. Burgos, G. T. Papadakis, H. A. Atwater

Schools, Seminars & Other Meetings

Stanford University Photonics Retreat 4/2019
Marshall, CA, USA

Quantum Metaphotonics & Metamaterials MURI Review 11/2016
Basic Research Innovation and Collaboration Center | Arlington, DC, USA

Triservice Metamaterials Review 11/2016
Basic Research Innovation and Collaboration Center | Arlington, DC, USA

Doctoral School: Metamaterials from THz to optics 9/2016
EUPROMETA Doctoral Programme, Metamaterials 2016 International Congress | Chania, Greece

Plasmonics Gordon Research Seminar 7/2016
Newry ME, USA

Metamaterials Science & Technology Workshop 7/2015
Center for Metamaterials & Integrated Plasmonics | San Diego, CA, USA

Plasmonics Gordon Research Seminar 7/2014
Newry ME, USA

Teaching Experience

Introduction to Nanophotonics-Teaching assistant 2014
California Institute of Technology | Instructor: Harry A. Atwater

- Graduate course. Gave lectures on Green's functions & Green's dyadics, energy transfer, plasmonics, Mie scattering theory & effective media. Developed problem sets & solutions, taught finite element methods for nanophotonics. Held problem solving sessions & office hours.
- **Evaluation:** Overall teaching effectiveness: 4.5/5, Presented material clearly in section or lab: 4.5/5, Was well prepared for section, office hours or lab: 4.75/5. Answered questions clearly and concisely: 4.25/5, Provided helpful comments on assignments, papers, exams: 4.25/5
- **Students' comments:** *"Georgia was extremely knowledgeable on the subject and always happy to assist with homework questions, even outside of her scheduled office hours. She was also helpful during lecture, interjecting to help answer other students' questions and raising some of her own. She was a thorough grader and always included comments whenever she removed points. Georgia is a first-rate TA"*, *"Excellent TA. Always explained topics clearly and marked fairly"*

Solid State Electronics for Integrated Circuits-Teaching assistant 2012
California Institute of Technology | Instructor: Axel Scherer

- Undergraduate course. Lab sessions fabricating integrated devices: Schottky Diodes, PN Diodes, MOSFETS, Microfluidic devices. Developed problem sets & solutions.
- **Evaluation:** Overall teaching effectiveness: 4/5, Presented material clearly in section or lab: 4.17/5, Was well prepared for section, office hours or lab: 4/5. Answered questions clearly and concisely: 4.33/5, Provided helpful comments on assignments, papers, exams: 4/5
- **Students' comments:** *"Always prepared and helped us a lot with understanding the material."*, *"Very nice and helpful in the lab and regarding material taught in class. Answered questions clearly and made sure everybody understood. Was well prepared in lab and went over theory while doing the labs."*

Outreach

- Women in Science and Engineering (WISE), Stanford, 2018
- Fundraising via the American Association for University Women (AAUW), Southern California, 2017

Extracurricular Interests & Activities

Musical Studies

- Degree of teaching theory & harmony of music 2005

  Awarded by the Hellenic Ministry of Culture

- Degree of Piano, Theory & Harmony of Music, Solfége, Byzantine Music, Conservatory Choir 1998-2005

Athletics

- Track & field 2001-2006

  Bronze national medal (Greece) in pentathlon (2002), bronze national medal in heptathlon (2003)

- Gymnastics (rhythmic gymnastics, floor, trampoline) -2000

  Bronze national medal (Greece)

- Synchronized swimming, swimming, & sailing -2006