

# Emilija Petronijević

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**Date and place of birth:** 23th January 1990, Jagodina, SERBIA  
**Nationality:** Serbian



## EDUCATION

*University of Rome La Sapienza, Rome, Italy*

**2014-2017**

### **PhD Studies**

Module: Nonlinear Photonics at the Department of Basic and Applied Sciences for Engineering  
PhD Thesis defended with honors on 1.2.2018.

*University of Belgrade, School of Electrical Engineering, Belgrade, Serbia*

**2013-2014**

### **Master Studies**

Module: Physical Electronics  
GPA 10.00 out of 10.00

*University of Belgrade, School of Electrical Engineering, Belgrade, Serbia*

**2009-2013**

### **Bachelor Studies**

Module: Physical Electronics  
GPA 10.00 out of 10.00

*Conservatorio di Musica Santa Cecilia, Rome, Italy*

**2016-2020**

### **Bachelor Studies**

Module: Opera singing with professor Maria Chiara Pavone

## WORK EXPERIENCE

*Nonlinear Photonics Laboratory, La Sapienza University of Rome*

**2018-present**

### **Postdoctoral fellow**

- Modelling and optimization of the slow-light devices based on high refractive index dielectric metamaterials, and their hybridization with thin layers of phase change materials
- Photoacoustic technique for measuring the absorption of plasmonic and dielectric nanowires
- Chirality in dielectric nanostructures covered by metallic layers
- Experimental work on chiral molecules and chiral nanostructures

*Nonlinear Photonics Laboratory, La Sapienza University of Rome*

**2014-2017**

### **PhD student**

- PhD thesis: “*Nanostructured semiconductor-based surfaces for nanoscale light manipulation*”: Two possibilities for electromagnetic field manipulation at nanoscale, by means of semiconductor nanoresonators, have been investigated numerically and experimentally: the resonant and circular dichroic behavior of GaAs-based nanowires, and the collective behavior of EIT-like Si-based nanoresonators controlled by thin layers of phase change materials GST and GeTe.

*Institute of Physics Belgrade, University of Belgrade*

**2013-2014**

### **Junior Researcher**

- Modelling and optimization of resonant devices for GHz and THz applications using COMSOL and CST
- Exploring liquid crystals for the tuning of the nonlinear effects in periodic resonant devices

*School of Electrical Engineering, University of Belgrade*

**2013-2014**

**Master's degree thesis in Nanoelectronics, Optoelectronics and Laser Engineering**

- Master's thesis "*The models of electron states in semiconductor nanodots in electric and magnetic fields*": Numerical method for electron states in the conduction band of type I and type II nanodots was developed. Aharonov-Bohm oscillations and Rashba effect in type II GaAsSb/InGaAs were examined and optoelectronic applications based on excitonic transitions were proposed.

TEACHING EXPERIENCE

*University of Rome La Sapienza, Rome, Italy*

**2017-2018**

**Teaching Assistant in Physics (Fisica 1)**

The Department of Basic and Applied Sciences for Engineering

*University of Belgrade, School of Electrical Engineering, Belgrade, Serbia*

**2013-2014**

**Teaching Assistant in Mathematics**

The Department of Mathematics

*University of Belgrade, School of Electrical Engineering, Belgrade, Serbia*

**2012-2013**

**Student-mentor**

- Helping students to better understand and complete their exercise in various courses at the first year of studying

AWARDS

*PREMIO Futuro della 8a Edizione Premio Nazionale GiovedìScienza 2019*

- National Award Giovedì Scienza Futuro for the project "Chirality and Nanostructures"

*Bandi di Ateneo 2019 Italia*

- Financial support for the start of the research project (2019)

*PHOTONICA 2017 - VI International School and Conference on Photonics*

- The best student presentation award by the organizing committee (2017)

*University of Rome La Sapienza, bando cooperazione con i PVS*

- Funding for the scientific and didactic exchange between the Nonlinear Photonics Laboratory and the Department of Physical Electronics, University of Belgrade

*SPIE's Optics + Optoelectronics International Symposia, Prague 2017*

- The best student oral presentation award (2017)

*Bandi di Ateneo 2016 Italia*

- Financial support for the start of the research project (2016)

*EOS Topical Meeting Capri 2015*

- The best student oral presentation award (2015)

*University of Belgrade*

- Valedictorian (2013)

*University of Belgrade, School of Electrical Engineering*

- Prize for the best student of the Department of Physical Electronics for five years in a row (2009-2014)

*Professor Mirko Milic Foundation*

- Prize for the best final year student with the highest grade in Electric Circuit Theory (2013)

*European Movement in Serbia*

- Meeting Europe in Denmark: one of the 50 best students in Serbia selected to visit Denmark (2008)

*Republic competition in physics*

- 1<sup>st</sup> prize (2008)

*Municipalities Jagodina*

- October prize for achievements in Physics, Mathematics and the Arts (2005)

COMPUTER SKILLS AND LANGUAGES

- Lumerical FDTD and DEVICE, MATLAB, Optiwave, RSoft Photonics Cad, COMSOL Multiphysics, LabVIEW, BOLSIG+, Python, C, Mathematica, Simulink, PCB Artist, Origin
- Serbian – native, English – advanced, with grade A Cambridge Certificate in Advanced English (CAE), Italian – advanced

## PUBLICATIONS

- **E. Petronijević**, A. Belardini, G. Leahu, T. Cesca, C. Scian, G. Mattei, and C. Sibilìa, “Circular dichroism in low-cost plasmonics: 2D arrays of nanoholes in silver”, *Appl. Sci.* **10**, 1316 (2020).
- **E. Petronijević**, H. Ali, N. Zaric, A. Belardini, G. Leahu, T. Cesca, G. Mattei, L. C. Andreani, and C. Sibilìa, “Chiral effects in low-cost plasmonic arrays of elliptic nanoholes,” *Opt Quant Electron* **52**, 176 (2020).
- A. Belardini, G. Leahu, **E. Petronijević**, T. Hakkarainen, E. Koivusalo, M. Rizzo Piton, S. Talmila, M. Guina, and Concita Sibilìa, “Circular Dichroism in the Second Harmonic Field Evidenced by Asymmetric Au Coated GaAs Nanowires,” *Micromachines* **11**, 225 (2020).
- **E. Petronijević**, A. Belardini, G. Leahu, T. Cesca, C. Scian, G. Mattei, and C. Sibilìa, “Circular dichroism in low-cost plasmonics: 2D arrays of nanoholes in silver”, *Appl. Sci.* **10**, 1316 (2020).
- **E. Petronijević** and C. Sibilìa, “Thin films of phase change materials for light control of metamaterials in the optical and infrared spectral domain,” *Opt Quant Electron* **52**, 110 (2020).
- T. Cesca, C. Scian, **E. Petronijević**, G. Leahu, R. Li Voti, G. Cesarini, R. Macaluso, M. Mosca, C. Sibilìa, and G. Mattei, “Correlation between in-situ structural and optical characterizations of the semiconductor-to-metal phase transition of VO<sub>2</sub> thin films on sapphire”, *Nanoscale* **12**, 851 (2020).
- **E. Petronijević**, E. M. Sandoval, M. Ramezani, C. L. Ordóñez-Romero, C. Noguez, F. A. Bovino, C. Sibilìa, and G. Pirruccio, “Extended Chiro-optical Near-Field Response of Achiral Plasmonic Lattices”, *J. Phys. Chem. C* **123**, 38, 23620-23627 (2019).
- **E. Petronijević**, M. Centini, T. Cesca, G. Mattei, F. Bovino, and C. Sibilìa, “Control of Au nanoantenna emission enhancement of magnetic dipolar emitters by means of VO<sub>2</sub> phase change layers”, *Opt. Express* **27**(17), 24260 (2019).
- **E. Petronijević**, G. Leahu, V. Di Meo, A. Crescitelli, P. Dardano, E. Esposito, G. Coppola, I. Rendina, M. Miritello, M. G. Grimaldi, V. Torrisi, G. Compagnini, and C. Sibilìa, “Near-infrared modulation by means of GeTe/SOI based metamaterial”, *Opt. Lett.* **44**(6), 1508-1511 (2019).
- **E. Petronijević**, G. Leahu, R. Li Voti, A. Belardini, C. Scian, N. Michieli, T. Cesca, G. Mattei, and C. Sibilìa, *Appl. Phys. Lett.* **114**, 053101 (2019).
- **E. Petronijević** and C. Sibilìa, “Enhanced near-field chirality in periodic arrays of Si nanowires for chiral sensing”, *Molecules* **24**(5), 853 (2019).
- T. Hakkarainen, **E. Petronijević**, M. Rizzo Piton, and C. Sibilìa, “Demonstration of extrinsic chirality of photoluminescence with semiconductor-metal hybrid nanowires”, *Sci. Rep.* **9**, 5040 (2019).
- **E. Petronijević**, G. Leahu, A. Belardini, M. Centini, R. Li Voti, T. Hakkarainen, E. Koivusalo, M. Rizzo Piton, S. Suomalainen, M. Guina, and C. Sibilìa, “Photo-Acoustic Spectroscopy Reveals Extrinsic Optical Chirality in GaAs-Based Nanowires Partially Covered with Gold”, *Int. J. Thermophys.* **39**(3), 45 (2018).
- **E. Petronijević**, G. Leahu, A. Belardini, M. Centini, R. Li Voti, T. Hakkarainen, E. Koivusalo, M. Rizzo Piton, S. Suomalainen, M. Guina, and C. Sibilìa, “Resonant Absorption in GaAs-Based Nanowires by Means of Photo-Acoustic Spectroscopy”, *Int. J. Thermophys.* **39**(4), 46 (2018).
- **E. Petronijević**, M. Centini, A. Belardini, G. Leahu, T. Hakkarainen, and C. Sibilìa, “Chiral near-field manipulation in Au-GaAs hybrid hexagonal nanowires”, *Opt. Express* **25**(13), 14148 (2017).
- **E. Petronijević** and Concita Sibilìa, “All-optically tunable EIT-like dielectric metasurfaces hybridized with thin phase change material layers,” *Proc. SPIE 10228*, Nonlinear Optics and Applications X, 102280K (2017).
- G. Leahu, **E. Petronijević**, A. Belardini, M. Centini, R. Li Voti, T. Hakkarainen, E. Koivusalo, M. Guina, and C. Sibilìa, “Photo-acoustic spectroscopy revealing resonant absorption of self-assembled GaAs-based nanowires”, *Sci. Rep.* **7**(1), 2833 (2017).
- P. Osewski, A. Belardini, **E. Petronijević**, M. Centini, G. Leahu, R. Diduszko, D. A. Pawlak, and C. Sibilìa, “Self-Phase-Matched Second-Harmonic and White-Light Generation in a Biaxial Zinc Tungstate Single Crystal”, *Sci. Rep.* **7**, 45247 (2017).

- G. Leahu, **E. Petronijević**, A. Belardini, M. Centini, C. Sibilìa, T. Hakkarainen, E. Koivusalo, M. Rizzo Piton, S. Suomalainen, and M. Guina, "Evidence of Optical Circular Dichroism in GaAs-Based Nanowires Partially Covered with Gold", *Adv. Opt. Mater.* **5**(16), 1601063 (2017).
- **E. Petronijević**, G. Leahu, V. Mussi, C. Sibilìa, and A. F. Bovino, "Photoacoustic technique for the characterization of plasmonic properties of 2D periodic arrays of gold nanoholes", *AIP Adv.* **7**(2), 025210 (2017).
- **E. Petronijević** and C. Sibilìa, "All-optical tuning of EIT-Like dielectric metasurfaces by means of chalcogenide phase change materials", *Opt. Express* **24**(26), 30411 (2016).

### CONFERENCES AND SCHOOLS

- Capri EOS Topical Meeting 2019, 9-11 September, 2019, Capri (Italy)
- PHOTONICA 2019 - VII International School and Conference on Photonics, 26-30 August, 2019, Belgrade (Serbia)
- Invited talk at the 20th International Conference on Photoacoustic and Photothermal Phenomena, 06-12 July, 2019, Moscow (Russia)
- Three poster presentations at CLEO/Europe-EQEC Conference, 23-27 June, 2019, Munich (Germany)
- E\PCOS 2018 - European Phase Change and Ovonic Symposium, 23-25 September, 2018, Catania (Italy)
- The International Summer School: "Basic Photothermal and Photoacoustic Techniques: Theory, Instrumentation and Application", 07-12 September, 2018, Erice (Italy)
- Short term scientific mission at the Optoelectronics Research Center, Tampere University of Technology, 12-24 April, 2018, Tampere (Finland)
- COST conference on Nanoscale Quantum Optics, 13-16 February 2018, Prague (Czech Republic)
- Capri EOS Topical Meeting 2017, 10-14 September, 2017, Capri (Italy)
- PHOTONICA 2017 - VI International School and Conference on Photonics, 28<sup>th</sup> August – 1<sup>st</sup> September 2017, Belgrade (Serbia)
- ICPPP19, 19<sup>th</sup> International Conference on Photoacoustic and Photothermal Phenomena, 16-20 July, 2017, Bilbao (Spain)
- SIE 2017, the 49<sup>th</sup> Annual Meeting of the Associazione Società Italiana di Elettronica (SIE), 21-23 June, 2017, Palermo (Italy)
- Fotonica 2017 AEIT, 19<sup>th</sup> edition, 03-05 May, 2017, Padova (Italy)
- SPIE's Optics + Optoelectronics International Symposia, April 24-27, 2017, Prague (Czech Republic)
- NanoInnovation 2016, 20-23 September, 2016, Rome (Italy)
- META'16, the 7<sup>th</sup> International Conference on Metamaterials, Photonic Crystals and Plasmonics, 25-28 July, 2016, Malaga (Spain)
- School of Photonics 2016: "Plasmonics and Nano-Optics", 10-14 July, 2016, Cortona (Italy)
- 9<sup>th</sup> Photonics Workshop 2016, 02-04 March 2016, Kopaonik (Serbia)
- Nanoscience and Nanotechnology, 28<sup>th</sup> September – 2<sup>nd</sup> October, 2015, Frascati (Italy)
- Capri EOS Topical Meeting 2015, 17-19 September, 2017, Capri (Italy)
- ICPPP18, 18<sup>th</sup> International Conference on Photoacoustic and Photothermal Phenomena, 6-10 September, 2015, Novi Sad (Serbia)
- Gender Balance and WG3 Meeting on Nanoscale Quantum Coherence, 02-03 July, 2015, Florence (Italy)
- Surface Plasmons and Plasmonics Workshop, 7-10 June, 2015, Santa Margherita Ligure (Italy)
- Fotonica 2017 AEIT, 19<sup>th</sup> edition, 06-08 May, 2015, Turin (Italy)
- Nanoscale Quantum Optics Cost Action Kick-off Workshop, 8-9 April 2015, Belgrade (Serbia)

### INTERESTS AND HOBBIES

- Opera singing, guitar, piano, travelling, rock music