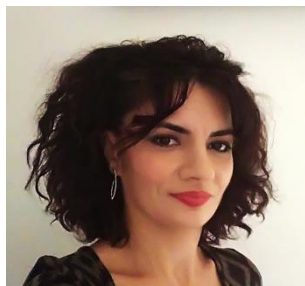



**PERSONAL INFORMATION**

Irina Alexandra Paun


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<sup>1</sup> Faculty of Applied Sciences, Physics Department, Politehnica University from Bucharest, Splaiul Independentei 313, , RO-060042, Romania

<sup>2</sup> Center for Advanced Laser Technologies, National Institute for Lasers, Plasma and Radiation Physics, Atomistilor 409 Magurele-Ilfov, RO-077125, Romania

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Sex Female || Nationality Romanian

**CURRENT POSITION**

 Assistant professor  
 Faculty of Applied Sciences, Physics Department, Politehnica University from Bucharest, Romania

Researcher second degree, National Institute for Lasers, Plasma and Radiation Physics, Magurele, Romania

**IDENTIFIERS**

 ORCID iD <https://orcid.org/0000-0002-4789-4123>

Web of Science Researcher ID L-7344-2017

H-index: 14

**WORK EXPERIENCE**

- |                     |  |
|---------------------|--|
| <b>2017-present</b> | Researcher (second degree)<br>Laser Materials Processing Laboratory, Center for Advanced Laser Technologies<br><i>Occupational skills:</i> Laser micro and nano-processing of biocompatible materials  |
| <b>2017-present</b> | Assistant professor<br>Politehnica University from Bucharest, Romania<br><i>Occupational skills:</i> teaching  |
| <b>2011-2017</b>    | Lecturer<br>Politehnica University from Bucharest, Romania<br><i>Occupational skills:</i> teaching, research (Laser ablation; Laser Optical Feedback Imaging; Digital Holographic Microscopy)  |
| <b>2003 -2011</b>   | Teaching Assistant<br>Politehnica University from Bucharest, Romania<br><i>Occupational skills:</i> teaching, reasearch (Laser ablation; Laser Optical Feedback Imaging; Digital Holographic Microscopy)   |
| <b>2016-2017</b>    | Head of Laser Materials Processing Laboratory<br>Center of Advanced Laser Technologies, National Institute for Laser, Plasma and Radiation Physics, Magurele, Romania  |
| <b>2012-2016</b>    | Researcher (third degree)<br>National Institute for Laser, Plasma&Radiation Physics, Magurele, Romania<br><i>Occupational skills:</i> research (Laser-assisted micro-nanoprocessing of biocompatible materials (Laser ablation; Matrix Assisted Pulsed Laser Evaporation; Laser Direct Writing via Two Photons Polymerization) |
| <b>2001 – 2002</b>  | Research Assistant<br>INFLPR, Magurele, Romania<br><i>Occupational skills:</i> research (Laser ablation)   |

**EDUCATION  
AND  
TRAINING**

- 2022** Habilitation Degree in PHYSICS  
Politehnica University from Bucharest, Romania  
Atestation number 4446 from 08.08.32022
- 2009** PhD diploma in Fundamental Sciences  
Politehnica University from Bucharest, Romania  
Diploma series G number 0000073  
Title of PhD thesis *Studies of the properties of materials based on laser-matter interaction*
- 2001 - 2003** Master in Medical Physics  
Master Diploma series C number 0005603  
Graduation mark: 9.77/10. Rank: 2/28  
Faculty of Physics, University of Bucharest, Romania
- 1997 – 2001** Graduate Diploma in Medical Physics  
Diploma series T number 0017332  
Graduation mark: 9.87/10. Rank: 1/35  
Faculty of Physics, University of Bucharest, Romania

Mother language Romanian

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C1	C1	C1	C1	C1
French	C1	C1	C1	C1	C1
D.E.L.F. and D.A.L.F. Diplomas					

Levels: A1/A2: Basic user - B1/B2: Independent user - C1/C2 Proficient user  
[Common European Framework of Reference for Languages](#)

Communication skills Good communication skills gained through 19 years of teaching at University Politehnica from Bucharest, Romania

Organisational / managerial skills

2021- 2022 Head of Laser Materials Processing Laboratory from CETAL, INFLPR

2021- 2022 Coordinator of graduation thesis at Faculty of Medical Engineering, University Politehnica from Bucharest, Romania

2020 Coordinator of practice work for undergraduate student from Faculty of Applied Sciences, University Politehnica from Bucharest, Romania

016-2018 Leader of research group of 4 people project 218PED/2018 *Holographic elements fabricated by laser direct writign via two photons polymerization for optical comunications*

2017-2018 Coordinator of graduation thesis at Faculty of Applied Sciences, University Politehnica from Bucharest, Romania

2016-2017 Head of Laser Materials Processing Laboratory from CETAL, INFLPR

2014-2016 Leader of research group of 10 people in the frame of the project PN-II-RU-TE-2014-4-2534 *Magnetic responsive scaffolds for stimulated bone regeneration*

2011 Responsible with students practice at Faculty of Applied Sciences, University Politehnica from Bucharest, Romania

#### Technical skills and competences

Laser-assisted materials ( polymers, metals, composites) processing by: laser ablation, Matrix Assisted Pulsed Laser Evaporation, laser direct writing via two photon polymerization

Laser systems for in real time, high spatial resolution, non-invasive imaging of polymeric materials and biological samples (Laser Optical Feedback Imaging, Digital Holographic Microscopy);

Samples analysis by fluorescence microscopy, confocal microscopy, Fourier Transformed Infrared Spectroscopy

#### Digital competences

KOALA software for hologram processing and 3D image reconstruction; MATLAB; COREL, GWYDDION; Origin, Image J

#### Projects

- 2016-2018 **Project responsible** *Holographic elements fabricated by laser direct writign via two photons polymerization for optical comunciations* (THECODE) 218PED/2017
- 2015-2017 **Project leader** *Magnetic responsive scaffolds for stimulated bne regeneration* PN-II-RU-TE-2014-4-2534
- 2010-2012 **Project leader** *Fabrication and testing of polymeric films for controlled drug delivery applications using advanced laser technique* PN II-RU 140/09.08.2010
- Participation in collaborative projects as team member**
- 2019-present Key person in European Project *BioCombs4Nanofibers* contract number 862016/2019
- 2016-2018 Key person in Project 197PED/2017 *Electromagnetic active scaffolds for bone regeneration* EMABONE
- 2016-2017 ELI-RO Project *Laser targets for ultraintense laser experiments* TARGET
- 2016-2018 Project PN-III-P2-2.1-PTE-2016-0072 no. 37PTE / 2016 *Technological transfer for increasing the level of security of holographic labels* TSCEH
- 2016-2017 Project PN-III-P2-2.1-BG-2016-0288 no. 45BG/2016 *Optimization of the fabrication technology of diffarctive elements with applications in security* OTED
- 2014-2016 Postdoctoral fellow Project PNCDI PN-II-PT-PCCA no. 30/2014 *Microfluidic micro-electro-fluidic system for the separation and electroporation of cells*
- 2012-2016 Key person Project UEFISCDI PN-II-PT-PCCA *Electrically Stimulated Scaffolds for Tissue Engineering* ELITISS
- 2007-2009 Project Capacities 4/CP/I/2007 *Development of digital holography laboratory with equipments for the analysis of micro-opto-electro-mechanical and biological systems*
- 2007-2009 Project PNCDI 2- D1-11030/18.09.2007 *Sistem laser avansat in femtosecunde pentru nanostructurare de metamateriale si cristale fotonice* (FEMAT)

#### Research fellowships

- 2007-2008 Early Stage Training-Marie Curie Fellowship - project *Advanced Laser Techniques (ATLAS)* at Institute for Electronic Structure and Laser IESL-FORTH, Heraklion, Greece, under the framework of the European Project FP6 (MEST-CT-2004-008048)
- 2007 Early Stage Training-Marie Curie Fellowship - project *Lasers for Art Conservation (ATHENA)* at Electronic Structure and Laser IESL-FORTH, Heraklion, Greece, under the framework of the European Project FP6 (MEST-CT-2004-50406)
- 2005-2006 Socrates Fellowship at University Joseph Fourier, Grenoble, France, topic *Laser Optical Feedback Imaging for non-invasive, high spatial resolution imaging of biological samples*
- 2002 *College on Medical Physics*, International Center for Theoretical Physics Abdus Salam, Trieste, Italy

## Publications(selection)

1. **Paun IA**, Calin BS, Popescu RC, Tanasa E, Moldovan A. Laser Direct Writing of Dual-Scale 3D Structures for Cell Repelling at High Cellular Density. *International Journal of Molecular Sciences*. 3(6):3247. DOI: 10.3390/ijms23063247. (2022)
2. **Paun I. A.**; Calin B. S.; Mustaciosu, C.C.; Tanasa E.; Moldovan A.; Niemczyk A.; Dinescu M. Laser Direct Writing via Two-Photon Polymerization of 3D Hierarchical Structures with Cells-Antiadhensive Properties *INTERNATIONAL JOURNAL OF MOLECULAR SCIENCES* 22(11) DOI 10.3390/ijms22115653 WOS 000660205600001 (2021)
3. Scarlat E.; Mihailescu M.; **Paun I.A.**; Identification of independent modes in two inputs free space communications system *OPTICS AND LASERS IN ENGINEERING* 136 DOI 10.1016/j.optlaseng.2020.106320 WOS 000583900900002 (2021)
4. **Paun IA**, Mustaciosu CC, Mihailescu M, Calin BS, Sandu AM, Magnetically-driven 2D cells organization on superparamagnetic micromagnets fabricated by laser direct writing, *Scientific Reports* 10:16418 (2020)
5. **Paun IA**, Mustaciosu CC, Popescu RC, Calin BS, Mihailescu M, Collagen/Chitosan Functionalization of Complex 3D Structures Fabricated by Laser DirectWriting via Two-Photon Polymerization for Enhanced Osteogenesis, *Int. J. Mol. Sci.* 21 6426 (2020)
6. Stochioiu A, Luculescu CR, **Paun IA**, Jinga LI, Stochioiu C, Fabrication and Characterization of Biplasmonic Substrates Obtained by Picosecond Laser Pulses, *Appl. Sci.* 10 5938 (2020)
7. **Paun IA**, Calin BS, Mustaciosu CC, Mihailescu M, Popovici CS, Luculescu CR, Osteogenic cells differentiation on topological surfaces under ultrasound stimulation *Journal of Materials Science* 54 (16) 11213-11230 (2019)
8. **Paun IA**, Calin BS, Mustaciosu CC, Mihailescu M, Moldovan A, Crisan O, Leca Am Luculescu CR, 3D Superparamagnetic Scaffolds for Bone Mineralization under Static Magnetic Field Stimulation, *Materials* 12(17) 2834 (2019)
9. Scarlat N, Mihailescu M, Mihale N, **Paun IA**, Calin BS, Luculescu CR, Tranca D, Adaptive phase steps for diffractive phase elements using two-photon polymerization, *Journal of optoelectronics and advanced materials* 21(3-4) 153-162 (2019)
10. Gatin E, Nagy P, Dubok O, **Paun IA**, Bucur V, Windisch P, Raman Spectroscopy: Application in Periodontal and Oral Regenerative Surgery for Bone Evaluation, *IRBM* <https://doi.org/10.1016/j.irbm.2019.05.002> (2019)
11. **Paun IA**, Popescu RC, Mustaciosu CC, Zamfirescu M, Calin BS, Mihailescu M, Dinescu M, Popescu A, Chioibas D, Soproniy M, Luculescu CR, Laser-direct writing by two-photon polymerization of 3D honeycomblike structures for bone regeneration, *Biofabrication* 10 025009 (2018)
12. **Paun IA**, Popescu RC, Calin BS, Mustaciosu CC, Dinescu M, Luculescu CR, 3D Biomimetic Magnetic Structures for Static Magnetic Field Stimulation of Osteogenesis, *Int. J. Mol. Sci.* 19 495; doi:10.3390/ijms19020495 (2018)
13. Luculescu CR, Acasandrei AM, Mustaciosu CC, Zamfirescu M, Dinescu M, Calin BS, Popescu A, Chioibas DG, Cristiand D, **Paun IA**, Electrically responsive microstructured polypyrrole-polyurethane composites for stimulated osteogenesis, *Applied Surface Science* 433 166-176 (2018)
14. Mihailescu M, Scarlat EN, **Paun IA**, Grigorescu I, Radu O, Nedelcu T, Empirical quantitative characterization of holographic phase images of normal and abnormal cervical cells by fractal descriptors, *Computer Methods in Biomechanics and Biomedical Engineering: Imaging & Visualization* 1-10 (2017)
15. Popescu C, Cristea D, Bitu B, Cristescu R, Craciun D, Chioibas GD, Luculescu CR, **Paun IA**, Duta L, Popescu AC, An Experimental Study on Nano-Carbon Films as an Anti-Wear Protection for Drilling Tools, *Coatings* 7(12) 228 (2017)
16. **Paun IA**, Zamfirescu M, Luculescu CR, Acasandrei AM, Mustaciosu CC, Mihailescu M, Dinescu M, Electrically responsive microreservoirs for controllable delivery of dexamethasone in bone tissue engineering, *Appl. Surf. Sci.* 392 321–331 (2017)
17. Tudor R, Mihailescu M, Kusko C, **Paun IA**, Nan AE, Kusko M, Simultaneous and spatially separated detection of multiple orbital angular momentum states, *Optics Communications* 368 141-149 (2016)
18. Mihailescu M, **Paun IA**, Zamfirescu M, Luculescu CR, Acasandrei AM, Dinescu M, Laser-assisted fabrication and non-invasive imaging of 3D cell-seeding constructs for bone tissue engineering, *J Mat Sci* 51 4262-4273 (2016)
19. **Paun IA**, Stokker-Cheregi F, Luculescu CR, Acasandrei AM, Ion V, Zamfirescu M, Mustaciosu CC, Mihailescu M, Dinescu M, Electrically stimulated osteogenesis on Ti-PPy/PLGA constructs prepared by laser-assisted processes, *Mater Sci Eng C Mater Biol Appl.* 55 61-9 (2015)
20. **Paun IA**, Zamfirescu M, Mihailescu M, Luculescu CR, Mustaciosu CC,

- Dorobantu I, Calenic B, Dinescu M, Laser micro-patterning of biodegradable polymer blends for tissue engineering, *J. Mater. Sci.* 50 (2) 923-936 (2015)
21. Mihailescu M, Popescu RC, Matei A, Acasandrei A, **Paun IA**, Dinescu M, Investigation of osteoblast cells behavior in polymeric 3D micropatterned scaffolds using digital holographic microscopy, *Applied Optics* 53(22) 4850-4858 (2014)
  22. Calenic B, **Paun IA**, van Staden RI, Didilescu A, Petre A, Dinescu M, Greabu M, Novel method for proliferation of oral keratinocyte stem cells, *J Periodont Res* doi: 10.1111/jre.12153SA (2013)
  23. **Paun IA**, Moldovan A, Luculescu CR, Dinescu M, Antibacterial polymeric coatings grown by matrix assisted pulsed laser evaporation, *Appl. Phys. A* 110:895–902 (2013)
  24. **Paun IA**, Mihailescu M, Calenic B, Luculescu CR, Greabu M, Dinescu M, MAPLE deposition of 3D micropatterned polymeric substrates for cell culture, *Appl. Surf. Sci.* (278) 166 (2013)
  25. Scarlat E, Mihailescu M, **Paun IA**, Scarlat M, Discriminating the main representatives of the white blood cell species on the basis of the fractal properties of the DHM phase profile, *U.P.B. Sci. Bull series A Appl. Mathem and Phys* 75(2) 147 (2013)
  26. **Paun IA**, Ion V, Luculescu CR, Dinescu M, Canulescu S, Schou J, In vitro studies of PEG thin films with different molecular weights deposited by MAPLE, *Appl. Phys. A* (109) 223(2012)
  27. **Paun IA**, Moldovan A, Luculescu CR, Staicu A, Dinescu M, MAPLE deposition of PLGA:PEG films for controlled drug delivery: influence of PEG molecular weight, *Appl. Surf. Sci* doi:10.1016/j.apsusc.2011.10.044 (2011)
  28. **Paun IA**, Ion V, Moldovan A, Dinescu M, MAPLE deposited polymeric blends coatings for controlled drug delivery, *AIP Conf. Proc.* 1464, 547 (2012)
  29. **Paun IA**, Moldovan A, Luculescu CR, Dinescu M, Biocompatible polymeric implants for controlled drug delivery produced by MAPLE, *Appl. Surf. Sci* 257 10780 (2011)
  30. **Paun IA**, Ion V, Moldovan A, Dinescu M, MAPLE deposition of PEG:PLGA thin films, *Appl. Phys. A* DOI: 10.1007/s00339-011-6548-0 (2011)
  31. **IA Paun**, Ion V, Moldovan A, Dinescu M, Thin films of polymer blends deposited by Matrix-Assisted Pulsed Laser Evaporation: effects of blending ratios, *Appl. Surf. Sci.* 257 5259–5264 (2011)
  32. Mihailescu M, Scarlat M, Gheorghiu A, Costescu J, Kusko M, **Paun IA**, Scarlat E, Automated imaging, identification, and counting of similar cells from digital hologram reconstructions, *Applied Optics* 50 (20) 3589-3597 (2011)
  33. **Paun IA**, Ion V, Moldovan A, Dinescu M, Thin films of polymer blends for controlled drug delivery deposited by matrix-assisted pulsed laser evaporation, *Appl. Phys. Lett.* 96 243702 (2010)
  34. **Păun IA**, Selimis A, Bounos G, Kecskeméti G, Georgiou S, Nanosecond and Femtosecond UV Laser Ablation of Polymers: Influence of Molecular Weight, *Appl. Surf. Sci.* 255(24 ) 9856-9860 (2009)
  35. Paraskevi P, **Păun IA**, Bounos G, Georgiou S, Fotakis C, The potential of UV femtosecond laser ablation for varnish removal in the restoration of painted works of art, *Appl. Surf. Sci.* 254 6875–6879 (2008)
- Hugon O, **Păun IA**, Ricard C, van der Sanden B, Lacot E, Jacquin O, Witomski A, Cell imaging by coherent backscattering microscopy using frequency shifted optical feedback in a microchip laser, *Ultramicroscopy* 108 (6) 523-528 (2008)
36. **Păun IA**, Lacot E, Analysis of noncooperative targets using a diode-pumped Nd:YAG microchip laser with frequency-shifted optical Feedback, *JOAM* 9(4) 1065 – 1070 (2007)
  37. Sandu AM, Ungureanu MA, Morega M, Călin VL, Moiescu MG, **Paun IA**, Mihailescu M, Realistic models of cultured cells for electroporation simulations starting from phase images, *Proc. SPIE Vol. 117180W, Advanced Topics in Optoelectronics, Microelectronics and Nanotechnologies X*, DOI: 10.1117/12.2571092 (2020)
  38. Mihailescu M, **Paun IA**, Scarlat EI, Mihale N, Tranca D, Calin BS, Luculescu CR, Optimal unequal phase steps for laser direct writing in DPE manufacturing, *Proceedings of SPIE 10818, Holography, Diffractive Optics and Applications VIII* DOI: 10.1117/12.2500922 (2018)
  39. Mihailescu M, Mihale N, Popescu RC, Acasandrei A, **Paun IA**, Dinescu M, Scarlat E, Focusing criterion in digital holographic microscopy image reconstruction *Proceedings of SPIE 9258 92580U* DOI: 10.1117/12.2070450 ISBN:978-1-62841-325-0 ISSN: 0277-786X (2015)

- EN
40. Mihailescu M, **Păun IA**, Popescu RC, Matei A, Acasandrei A, Dinescu M, Scarlat EN, Deep Walls Microscaffold Characterization Using Digital Holographic Microscopy, CLEO-PR&OECC/PS Japan (2013)
  41. Mihailescu M, Popescu RC, **Păun IA**, Acasandrei AM, Matei A, Cells features on polymeric blends substrate analyzed using digital holographic microscopy, The 2<sup>nd</sup> Biophotonics Conference Taiwan (2013)
  42. Mihailescu M, Matei A, Acasandrei AM, Popescu RC, **Paun IA**, Dinescu M, MG63 cells behavior on rough polypyrrole scaffolds investigated by digital holographic microscopy, SPIE 9204 Interferometry XVII: Advanced Applications, 92040N (2014)
  43. **Păun IA** Optical feedback effects on microchip laser dynamics used for determining the characteristics of the materials Proceedings SPIE 6606 International Conference ALT (2007)

**Academic books and scientific books chapters (selection)**

1. M. Mihailescu, **I.A. Paun**, L. A-M. Nita, "Fizică și Biofizică Probleme și Aplicații", Politehnica Press ISBN 978-606-515-953-2 (2021)
2. F. Stokker-Cheregi, A. Palla-Papavlu, **I.A. Paun**, T Lippert and M. Dinescu, *Laser Structuring of Soft Materials: Laser-Induced Forward Transfer and Two-Photon Polymerization*, Chapter 9 in *Advances in the Application of Lasers in Materials Science*, Springer Series in Materials Science 274 © Springer Nature Switzerland, P. M. Ossi (ed.) (2018)
3. M. Mihailescu, **I.A. Păun** *Modeling of biophysics phenomena*. Ed. Politehnica Press, 2016 ISBN 978-606-515-703-3 (2016)
4. M. Mihailescu, E.I. Scarlat, **I.A. Păun**, I. Grigorescu, R. Radu, O.T. Nedelcu *Fractal descriptor on holographic images of cervical cells*, Computational Vision and Medical Image Processing, Editors J. M. Tavares, R. M. Natal Jorge, Taylor and Francis Group, ISBN 978-1-138-02926-2 255-260 (2015)
5. **I.A. Păun**, A. Selimis, G. Bounos, S. Georgiou, *Studies on the UV femtosecond ablation of polymers: Implications for the femtosecond laser cleaning of painted artworks*, Lasers in the Conservation of Artworks VIII – Radvan et al. (eds) © 2011 Taylor & Francis Group, London, ISBN 978-0-415-58073-1 (2011)
6. G. Morariu, M. Alexandru, **I.A. Păun**, *Microwaves. Fundamentals and Applications. Vol II. Transmission lines*, Ed. Transilvania University Brasov ISBN 978-973-598-603-2 (2009)
7. G. Morariu, A. Mailat, **I.A. Păun**, *Microwaves. Fundamentals and Applications*, Ed. Transilvania University Brasov, ISBN 973-635-754-6 (2006)
8. L. Daniello, **I.A. Păun**, *Elements of Quantum Physics*, Ed. Printech, ISBN 973-718-323-1 Bucharest (2005)
9. L. Daniello, **I.A. Păun**, *Physics applications. Basics of quantum physics. Applications in atom physics and solid state physics*, Ed. Printech, Bucharest, ISBN 973-718-034-8 (2004)

**Patents**

Mihailescu M, Scarlat EN, Nicolae M, **Păun IA**, Luculescu CR, Calin BS, *Sistem de comunicații optice în spațiul liber cu arhitectură ramificată folosind lame cu fază elicoidală și holograme pentru multiplexarea modurilor*, OSIM nr. A00890 din 12.11.2018

Date: 10.10.2022

Signature:

