## PERSONAL INFORMATION

# Razvan Marian MIHALCEA



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Sex Male | Nationality Romanian

## WORK EXPERIENCE

02/2019–Present

### Research engineer

National Institute for Laser Plasma and Radiation Physics INFLPR, Photonics Investigations Laboratory, Center for Advanced Laser Technologies www.inflpr.ro ; https://cetal.inflpr.ro /

Vibration and shocks testing of components for space applications applying ESA standards, for military applications using MIL-STD standards and for civilian applications using TUV Germany standards.

Fiber optics investigations – setup design, data reading and interpretation

Spectroradiometry investigations - development of experimental setups, characterization of diffuse reflectance and emissivity.

11/2018–02/2019

### System engineer

Ericsson, Bucharest (Romania)

Maintenance of the telecommunications network for telephone / internet / television companies in Spain.

08/2017–08/2018

### Internship - research assistant

Within the National Institute for Laser Plasma and Radiation Physics INFLPR, Photonics Investigations Laboratory, Center for Advanced Laser Technologies

Applications and tasks: shock and vibration testing of optomechanical components, 3D design software, numerical simulations, fiber optics investigations

05/2017–08/2017

### Internship

Within the National Institute for Laser Plasma and Radiation Physics INFLPR, Photonics Investigations Laboratory, Center for Advanced Laser Technologies

Applications: shock and vibration testing, fiber optics investigations

## EDUCATION AND TRAINING

2020– Present

### PhD student

University POLITEHNICA of Bucharest

Faculty of Applied Sciences

Physics Department

2018–2020

### Master degree

University POLITEHNICA of Bucharest

Faculty of Industrial Engineering and Robotics

Engineering of Nanostructures and Unconventional Processes

2014–2018 **Bachelor's degree**

University POLITEHNICA of Bucharest, Bucharest, Romania

Engineering and Management of Technological Systems

Engineering of Nanostructures and Nonconventional Processes

## PERSONAL SKILLS

Mother tongue(s) Romanian

Foreign language(s)

| | UNDERSTANDING | | SPEAKING | | WRITING |
|---|---|---|---|---|---|
| | Listening | Reading | Spoken interaction | Spoken production | |
| Spanish | C2 | C2 | C2 | C2 | C2 |
| | I lived in Spain for 7 years and studied there | | | | |
| English | C1 | B2 | C1 | C1 | B1 |

Levels: A1 and A2: Basic user - B1 and B2: Independent user - C1 and C2: Proficient user
Common European Framework of Reference for Languages

Communication skills Good communication skills, set clear goals and expectations, active listening, presentation skills clear and concise expression.

Organisational / managerial skills Planning and scheduling, effectively convey information, adaptability, organization of workspace, problem-solving, self-management, project management.

Job-related skills: Planning and imagination (design and assembly of experimental setups) easy understanding and using the equipment present in vibrometry, fiber optic and spectroradiometry laboratories. Software: AUTOCAD, INVENTOR, COMSOL Multiphysics, LABVIEW, Origin.

Digital skills

| SELF-ASSESSMENT | | | | |
|---|---|---|---|---|
| Information processing | Communication | Content creation | Safety | Problem-solving |
| Proficient user | Proficient user | Proficient user | Proficient user | Proficient user |

Levels: Basic user - Independent user - Proficient user
Digital skills - Self-assessment grid

## ADDITIONAL INFORMATION

Projects participation:

1 FAIR02/2020 SPARC-RO "Atomic interactions in supercritical field: Contribution to the GPAC E129 Experiment at ESR"

2 PCCDI 71- 2018-2021 "Infrared sensors for infrastructure security applications (SENSIS)", project cod

3 Solutions - 2020 - 2021 - Decontamination devices against SARS-CoV-2 virus (UV, microwave, X-ray, biochemical, nanoparticles, others).

4 PED 470 2021-2023 "In-field calibration validation to improve ground support spectral measurements for current and future earth observation systems"

5 PCE 93/2021 - 2023 "Discrimination based on acoustic waves of gas sorption in ZnO in variable ambient conditions / ZnO Sorbtion"

6 PTE-2021- 0670 " Laser welding technology for electric energy storage systems based on lithium-ion batteries"

7 Ped 666/2022 – 2024 "Multi-sensor data fusion platform for integrated monitoring of ionizing radiation /MEMOIR"

8 HORIZON- EUROATOM 2023-NRT-01 “A new technology of in-situ observation datasets to address climate change effects in hard-to-reach forest areas”

9 RoNaQCI (ROMANIAN NATIONAL QUANTUM COMMUNICATION INFRASTRUCTURE - INFLPR QUANTUM HUB )

10 ELI-RO/RDI/2024_039 REal-time “Molecular Imaging of reactive oxygen species effects in tumoral, non-tumoral and immune cells using high-power LAser and plasma Sources In the FLASH and conventional regime” REMILASI FLAS H

11 ELI-RO/RDI/2024_030 “ Hgh-Power laser generated ultra-intense transient magnetic field molecular effects on leukemic and lymphomatus cancer cells” HiPoCell

12 European Space Agency DEFLOX - CCN5 Project Towards an integrated network of FloX systems. Focus on FLEX mission

13 FAIR-RO/RD/2024_004 “Atomic interactions in super critical fields: Contribution to E129 the ultrafast spectroscopy experiment at ESR@GSI”

14 119 TE / 2025 LIFEFORMS A novel approach on optical fiber-based platforms tailored for bio-medical applications in radiation environments

Publications:

1 – Razvan Marian MIHALCEA, Andrei STANCALIE, Elena LACATUS. “STUDY OF VIBRATIONS PROPAGATION ON A U-SHAPED BAR FINDING THE RESONANT FREQUENCIES” Vol 24 No 1 (2020): Nonconventional Technologies Review

2 – Andrei Stăncălie[1], Flavio Esposito [2],*, Constantin Daniel Neguț[2], Marian Ghena [1], Razvan Mihalcea [1], Anubhav Srivastava [2], Stefania Campopiano [2], Agostino Iadicicco [2] “A new set-up for real time investigations of optical fiber sensors subjected to gamma-rays: case study on long period gratings” Sensors 2020,20, 4129

3 - Stancalie, A; Esposito, F; Negut, CD; Ghena, M; Mihalcea, R; Srivastava, A; Campopiano, S; Iadicicco, A; "A New Setup for Real-Time Investigations of Optical Fiber Sensors Subjected to Gamma-Rays: Case Study on Long Period Gratings"; SENSORS 20 (15) 4129 (2020).

4 - Antreas Theodosiou 1,Arnaldo Leal-Junior 2,Carlos Marques 3,Anselmo Frizera 2,Antonio J. S. Fernandes 3,Andrei Stancalie 4,Andreas Ioannou 1,Daniel Ighigeanu 4,Razvan Mihalcea 4,Constantin Daniel Negut 5,Kyriacos Kalli 1 Comparative Study of γ- and e-Radiation-Induced Effects on FBGs Using Different Femtosecond Laser Inscription Methods MDPI Sensors 2021, 21(24), 8379

5 - Mihai, L; Mihalcea, R; Tomescu, R; Paun, C; Cristea, D; "Selective Mid-IR Metamaterial-Based Gas Sensor System: Proof of Concept and Performances Tests"; NANOMATERIALS MAR (2022) - ().

6 - Esposito, F; Stancalie, A; Srivastava, A; Smietana, M; Mihalcea, R; Negut, D; Campopiano, S; Iadicicco, A; "The Impact of Gamma Irradiation on Optical Fibers Identified Using Long Period Gratings"; JOURNAL OF LIGHTWAVE TECHNOLOGY 41 (13) 4389-4396 (2023).

7 - Leal, A Jr; Theodosiou, A; Frizera, A; Fernandes, AJ; Stancalie, A; Ioannou, A; Mihalcea, R; Negut, D; Ighigeanu, D; Kalli, K; Marques, C; "Influence of gamma and electron radiation on perfluorinated optical fiber material composition"; MATERIALS LETTERS 340, 134205 (2023).

8 - Mihalcea, R; Ighigeanu, D; Negut, D; Stancalie, A; "COMPARATIVE EVALUATION OF ELECTRON AND GAMMA INDUCED EFFECTS ON FBG FABRICATED IN STANDARD AND RADIATION HARDENED OPTICAL FIBERS BY DIFFERENT TECHNIQUES"; UNIVERSITY POLITEHNICA OF BUCHAREST SCIENTIFIC BULLETIN-SERIES A-APPLIED MATHEMATICS AND PHYSICS 85 (3) 117-130 (2023).

9 - Flavio Esposito, Andrei Stancalie, Anubhav Srivastava, Mateusz Smietana, Jan Mrazek, Razvan Mihalcea, Constantin Daniel Negut, Stefania Campopiano, and Agostino Iadicicco , Response of long period gratings written in B/Ge and P-doped optical fibers to gamma radiation, Proc. SPIE 12643 126430A (12643) 126430A (2023)

10 - Mihai Stafe, Georgiana C. Vasile, Răzvan Mihalcea, Constantin Daniel Neguț, Constantin

Neguțu, Niculae N. Pușcaș , "Third harmonics emission with nanosecond and femtosecond lasers in air. Gamma radiation effects on optical fibers" Proc. SPIE 12493 124931E (2023)

11 - Flavio Esposito, Dariusz Burnat, Razvan Mihalcea, Daniel Negut, Anubhav Srivastava, Stefania Campopiano, Lucia Sansone, Michele Giordano, Andrei Stancalie , Agostino Iadicicco , Mateusz Smietana , "Optical properties of thin films monitored in real-time at high gamma radiation doses using long period fiber gratings" Optics & Laser Technology 176 (2024) 111019

12 - Electron Radiation Impact on Long Period Gratings in Different Optical Fibers Andrei Stancalie, Flavio Esposito et al. IEEE Sensors Journal, 25, 2, 1 2025

13 - Carbon and Nitrogen Surface Contamination Contributions in ZnO Nanowire Based Hydrogen Sensing, Aurelian Marcu, Sorin Vizireanu et al. Chemosensors, 13, 6, 5 2025

14 - Detection of gamma irradiation with milligray resolution using a slow-light fiber Bragg grating Bastien Van Esbeen, Bastien Van Esbeen et al. Optics Letters, Vol. 50, Issue 13, pp. 4398-4401, 50, 13, 7 2025

15 - Flavio Esposito, Andrei Stancalie, Anubhav Srivastava, Razvan Mihalcea, Ivo Bartoň, Daniel Negut, Stefania Campopiano, Mateusz Śmietana, Jan Mrázek, Agostino Iadicicco, „Characterization of Gamma Radiation Sensitivity in Cerium, Lutetium and Aluminum Doped Optical fiber with Long Period Gratings" , Journal of Lightwave Technology , Early acc. (2025)

16 - Flavio Esposito, Anubhav Srivastava, Adam Filipkowski, Dariusz Pysz, Razvan Mihalcea, Daniel Negut, Stefania Campopiano, Monika Bouet, Andrei Stancalie, Andy Cassez, Geraud Bouwmans, Ryszard Buczynski, Mateusz Śmietana, Agostino Iadicicco, „Long period gratings inscribed with electric arc in nanostructured optical fibers and their sensitivity to gamma radiation", Journal of Lightwave Technology , Early acc. (2025)

17 - 13. Flavio Esposito, Andrei Stancalie, Anubhav Srisvastava, Razvan Mihalcea, Ivo Barton, Daniel Negut, Stefania Campopiano, Mateusz Smietana, Jan, Mrazek, Agostino Iadicicco, „Extraordinary gamma radiation sensitivity of long period gratings inscribed in lutetium aluminum garnet doped optical fiber", IEEE Sensors Journal , – (2025)

Grants Awarded:

ENSAR 2 (E129/STA) " European Nuclear Science and Applications Research 2"
Work visit at GSI

COST CA16220 School France –"Photonic Integration for Aerospace, Satellite & Radar Technology"

COST CA17134 4th Annual MC/WGs meeting Bucharest Romania

COST CA17134 Final Conference & MC5 meeting Izmir Türkiye

Conferences:

1 - CETAL workshop - 2018 , 2019 "Test applications at the Vibrometry Laboratory at CETAL"

2 First place at the Student Scientific Communications Session 2019, University "POLITEHNICA" of Bucharest, Faculty of Industrial Engineering and Robotics, with the paper entitled "MODELING OF FUNTIONAL SELF-ASSEMBLED OPTO-MECHANIC-SYSTEMS"
AUTHORS: Razvan Marian MIHALCEA, Andrei STANCALIE, Elena LACATUS.

3 - First place at the Student Scientific Communications Session 2019, University "POLITEHNICA" of Bucharest, Faculty of Industrial Engineering and Robotics, with the paper entitled " Studies on the modeling of self-assembled systems"
AUTHORS: Razvan Marian MIHALCEA, Andrei STANCALIE, Elena LACATUS.

4 - A. Marcu, R. Mihalcea, A. Stancalie, C. Viespe, and N. Ionut, "Oxide Nanostructure Growing for Sensors Applications", 6th Biennial International Conference on Emerging Trends in Engineering Science and Technology - ICTEST2020, Thrissur, India

5 - Ionut Nicolae, Razvan Mihalcea, Mihai Serbanescu, Cristian Viespe, Aurelian Marcu , Hydrogen isotopes discrimination with SAW sensors , Smart NanoMaterials 2021 - SNAIA 2021, 7-10.12.2021 2021, Online,

6 - Robert Klas, Alexander Kirsche,Vinzenz Hilbert, Philipp Gierschke, Lucas Eisenbach, Alexander Borovik , Sergiy Trotsenko, Stefan Schippers, Zoran Andelkovic, Uwe Spillmann, Razvan Mihalcea, Laura Mihai, Andrei Stancalie , Michael Lestinsky , Frank Herfurth , Günter Weber, Angela Bräuning Demian , Thomas Stöhlker, Jens Limpert and Jan Rothhardt, XUV

photoionization at CRYRING, 18th Topical Workshop of the Stored Particles Atomic Physics Research Collaboration (SPARC), 06.09.2021-09.09.2021 2021, Darmstadt, Germany

7 - Aurelian Marcu, Razvan Mihalcea, Cosmin Samoil, Emil Slushanschi, Viorel Chihaia, Ionut Nicolae and Cristian Viespe, “ZnO Nanostructures in SAW Sensing”, MRS Spring Virtual Meeting 2021, 18-23 April, San Francisco, USA

8 - Ionut Nicolae, Razvan Mihalcea, Bogdan Calin, Cristian Viespe and Aurelian Marcu, “Hydrogen Detection and Discrimination using ZnO Nanostructures”, MRS-Fall 2021, 29-Nov – 2 Dec, Boston, Massachusets, USA

9 - C. Samoil, V.Chihaia, Razvan Mihalcea, Ionut Nicolae, M.Serbanescu, E. Slushanschi, Cristian Viespe and Aurelian Marcu, “Hydrogen sorbtion in ZnO nanostructures”, SNAIA 2021, 7-10 December, Paris, France

10 - A. Marcu, R. Mihalcea, I. Nicolae, C. Viespe, M. Dumitru, PLD-VLS Grown ZnO Nanowires for Sensors Applications, COLA 2022, 24-29 April 2022 2022, Matsue, P52

11 - Ionut Nicolae, Cornel Staicu, Cristian Viespe, Razvan Mihalcea, Mihai Serbanescu, Aurelian Marcu, Hydrogen isotopes discrimination studies on SAW sensors, The International Conference on Laser, Plasma and Radiation - Science and Technology (ICLPR-ST), 7-10 Iunie 2022, Bucuresti,

12 - R. Mihalcea, M. Serbanescu, M. Dumitru, A. Marcu, ZnO Nanowire Morphology Control in VLS/PLA, International Conference & Exhibition on Nanotechnologies, Organic Electronics & Nanomedicine, 19th Int. Conference on Nanosciences & Nanotechnologies, 5-8 Iulie 2022 2022, Salonic,

13 - Ionut Nicolae, Razvan Mihalcea, D. Costea, C.Staicu, Mihai Serbanescu, Cristian Viespe, E. Slushanschi, Aurelian Marcu, ZnO Nanowire Based Hydrogen Discrimination with SAW Sensors, International Conference & Exhibition on Nanotechnologies, Organic Electronics & Nanomedicine, 19th Int. Conference on Nanosciences & Nanotechnologies, , 5-8 Iulie 2022 2022, Salonic,

14 - Razvan Mihalcea, Mihai Serbanescu, Marius Dumitru, Aurelian Marcu, Morphology Control Of Zinc Oxide Nanowire, 5th International Conference on Emerging Technologies in Materials Engineering – EmergeMAT, 27-28 October 2022, Bucharest,

15 - Mihai Laura, Mihalcea Răzvan, Şerbănescu Mihai, Stăncălie Andrei, MacArthur Alasdair, Development of a portable system for in-field calibration validation to improve the ground-based measurements for the future Earth Explorer Mission FLEX, European Space Agency’s 2022 Living Planet Symposium, 23-27 May 2022 2022, Bonn, Germany

16 - F. Esposito, A. Stancalie, A. Srivastava, M. Śmietana, R. Mihalcea, C.D. Neguț, S. Campopiano, A. Iadicicco , Gamma irradiation and recovery effects on optical fibers investigated by Long Period Grating, 53rd Annual Meeting of the Associazione Società Italiana di Elettronica (SIE), 7-9 Septembrie 2022, Calabria,

17 - Andrei STANCALIE, Flavio ESPOSITO, Anubhav SRIVASTAVA, Razvan MIHALCEA, Constantin Daniel NEGUȚ, Stefania CAMPOPIANO, Agostino IADICICCO , Gamma irradiation of arc-induced Long Period Fiber Gratings for dosimetry applications , The International Conference on Laser, Plasma and Radiation - Science and Technology (ICLPR-ST) , 7-10 iunie 2022, Bucuresti,

18 - Andrei STANCALIE, Petrisor-Gabriel BLEOTU, Laura MIHAI, Razvan MIHALCEA, Daniel IGHIGEANU, Antreas THEODOSIOU, Kyriacos KALLI, Charged Particle Beam Diagnostics Utilizing Custom Designed Optical Fiber Sensors, The International Conference on Lasers, Plasma, and Radiation – Science and Technology, 7-10 iunie 2022, Bucuresti, Romania

19 - G. Bleotu, A. Stancalie, L.Mihai, R. Mihalcea, D. Ighigeanu, A. Theodosiou, K. Kalli, Electron Beam Diagnosis Utilizing Fiber Bragg Gratings , 10th International Conference on Photonics, Optics and Laser Technology, 10-11 Februarie 2022, Padova, Italy

20 - Aurelian Marcu, Viorel Chihaia, Ionut Nicolae, Razvan Mihalcea, Mihai Serbanescu, Cornel Staicu, Cristian Viespe and Marius Dumitru, PLA-VLS grown ZnO nanowires for gas sensing applications, LPM2023, 13-16 June 2023 2023, Hirosaki, Japan

21 - A. Marcu, R. Mihalcea, I. Nicolae, C. Viespe, M. Serbanescu, M. Dumitru, Nanostructure morphology control in PLD / VLS, ICPEPA - 12, 18-22 September 2023 2023, Suzhou, China

22 - Razvan Mihalcea, Mihai Serbanescu, Ionut Nicolae, Marius Dumitru, Cristian Viespe, Aurelian Marcu, Oxide nanowires for gas sensing applications, Nanoinovation 2023, 18-22 September 2023, Roma, Italy

23 - Flavio Esposito, Andrei Stancalie, Anubhav Srivastava, Mateusz Smietana, Jan Mrazek, Razvan Mihalcea, Constantin Daniel Negut, Stefania Campopiano, Agostino Iadicicco, Response of long period gratings written in B/Ge and P-doped optical fibers to gamma radiation, European Workshop on Optical Fibre Sensors (EWOFS 2023), 23-26 Mai 2023, Mons, Belgium

23 - Razvan Mihalceaa, Daniel Negutc, Andrei Stancalie, Kyriakos Kallid, Antreas Theodosiou, Response of femtosecond laser written fiber Bragg gratings during γ-radiation SPIE Optics + Optoelectronics, 7-10 April 2025, Prague, Czech Republic