Europass Curriculum Vitae

Personal information

First name(s) / Surname(s)	**Mihailescu, Mona**
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Nationality	Romanian

Research fields

Physics, biophysics, biomedical optoelectronics, quantum optics
Habilitation "Research in digital holography of real and virtual objects. Applications in biomedicine and optical communications." sept. 2021, nr. 3152 din 17.02.2022

Work experience

Dates	1 oct. 2023 – present
Occupation or position held	Professor
Main activities and responsibilities	Education, research
Name and address of employer	Politehnica University of Bucharest, 313 Splaiul Independenţei, sector 6 Bucharest
Type of business or sector	Education
Dates	1 oct. 2017 – 2023
Occupation or position held	Associate Professor
Main activities and responsibilities	Education, research
Name and address of employer	Politehnica University of Bucharest, 313 Splaiul Independenţei, sector 6 Bucharest
Type of business or sector	Education
Dates	1 oct. 2008 – 2017
Occupation or position held	Lecturer
Main activities and responsibilities	Education, research
Name and address of employer	Politehnica University of Bucharest, 313 Splaiul Independenţei, sector 6 Bucharest
Type of business or sector	Education
Dates	2001 – 2008
Occupation or position held	Assistant
Main activities and responsibilities	Education, research
Name and address of employer	Politehnica University of Bucharest, 313 Splaiul Independenţei, sector 6 Bucharest
Type of business or sector	Education
Dates	oct. 1st 1991 –sept. 30th 2001

Main activities and responsibilities	Education
Name and address of employer	Different elementary schools in Bucharest
Type of business or sector	Education

Education and training

Dates	October 2019
Title of qualification awarded	Diploma
Principal subjects/occupational skills covered	Quapital Summer School
Name and type of organisation providing education and training	Slovak National Center for Quantum Technologies, Bratislava, Slovakia
Dates	Julie 2008
Title of qualification awarded	Diploma
Principal subjects/occupational skills covered	Physics and chemistry of the atmosphere, from laboratory experiments to field campaign
Name and type of organisation providing education and training	ARGUS PHYCAFOR, ECONET 16238UC programs, University of Science and Technologies, Lille, France
Dates	February 2008
Title of qualification awarded	Certificate for participation
Principal subjects/occupational skills covered	Micro to nano-photonics for life science
Name and type of organisation providing education and training	ICTP Trieste, The Abdus Salam International Centre for Theoretical Physics
Dates	February 2008
Title of qualification awarded	PhD Diploma
Principal subjects/occupational skills covered	Design and realization of diffractive microcomponents and holographic methods for object reconstruction
Name and type of organisation providing education and training	Politehnica University Bucharest
Dates	August 2006
Title of qualification awarded	Leistungsnachweis Certificate
Principal subjects/occupational skills covered	Diffractive optics, Fourier optics, Holography and applications, Adaptive Optics and Microoptics
Name and type of organisation providing education and training	Humboldt Universitat zu Berlin, Institut fur Physik
Dates	1986-1991
Title of qualification awarded	Graduate diploma
Principal subjects/occupational skills covered	Mechanics, Thermodynamics, Optics, Quantum physics, Statistics, Electrodynamics, Seismology, Ocean-atmosphere Interaction, Structure and thermodynamics of the atmosphere,
Name and type of organisation providing education and training	Bucharest University, Physics Faculty

Personal skills and competences

Mother language(s) **romanian**

Other language(s)

Self-assessment	Understanding				Speaking				Writing	
European level (*)	Listening		Reading		Spoken interaction		Spoken production			
Englisch	B2	Independent user	C1	Proficient user	B2	Independent user	B2	Independent user	B2	Independent user
French	A1	Basic user	A2	Basic user						

(*) Common European Framework of Reference for Languages

Social skills and competences

I have a good team spirit and good communications skills gained through my works with different colleagues

Organisational skills and competences

I organized digital holography laboratory in Politehnica University of Bucharest and many experiments in it http://www.physics.pub.ro/Cat_Fizica_1/Prezentare_Centre/Digital_Holography_Laboratory.pdf
I am the leader of the digital holography laboratory
I established and equipped the first **QUANTUM OPTICS LABORATORY** in Romania.
I was coordinator in 6 national – projects/grants.
I coordinate one European grant for mobilities.
I managed an Work Package in the FP7 project
I was responsible for our university in 7 grants/projects
I was team member in 13 grants/projects.

Technical skills and competences

► I designed and made different experimental setups (to study optical phenomenon as interference, diffraction, holography) from mechanical and optical components. On the optical table I aligned a Mach-Zehnder interferometer to study transparent samples (1) natural objects like cells or atmospheric aerosols, (2) man-made objects like microstructures, substrates for tissue engineering. From their 3D images, I extract some properties, which characterize each sample type (micrometric dimensions on all axes)..

► I designed specific diffractive optical elements, as parts from the experimental setups. Applications are in the field of terrestrial information transmission using laser beams spatially modulated in amplitude and/or phase. We use vortex beam and Bessel beam to encode information for free-space optical communications.

► I designed and constructed quantum sources for entangled photons, of Sagnac type, with PPKTP crystal. We characterized and used it in combination with diffractive elements of Airy type.

► Using fluorescence and hyperspectral enhanced dark field microscopy, we introduced different methods for images processing: i/ method for quantitative measurement of the nanoparticles concentration incorporated in different components of cells (nucleus, cytoplasm, perinuclear) from double fluorescence marked images, ii/ extended tool to measure the incorporation ratio relative to the cells projected area, iii/ method for irradiated nucleus classification using machine learning tools on 2D images and 1D spectral profiles, etc.

Computer skills and competences

Office, AUTOCAD, MATLAB, CorelDraw, LABVIEW
In MATLAB I wrote: (1) a code to simulate the propagation in Fresnel approximation, (2) a code to calculate computer generated holograms, in different variants, (3) a code to made simultaneously different operations on an image obtained from a hologram reconstruction: separates the centroid of each cell even when they are tangential, counts and measures the morphological properties (4) a code to read many images and to extract information from them to exhibit automatically statistical results after microscopically properties of particles contained in them (5) different other codes.
I use an interface in LABVIEW to control a spatial light modulator and to obtain a desired intensity distribution in far field which can be changed in real time.

Additional information

1. Negoiță, Ilișanu, Irimescu, Popescu, Tudor, M. MIHĂILESCU, Scarlat, Pleavă, Dinischiotu, Savu, Specific spectral sub-images for machine learning evaluation of optical differences between carbon ion and X ray radiation effects, Heliyon, Vol.10, Iss. 15, 2024, DOI10.1016/j.heliyon.2024.e35249
2. Ioniță, Popescu, Irimescu, Deaconu, Tarbă, Matei, M. MIHĂILESCU, Savu, Berger, Role of mesoporous silica functionalized with boronic acid derivative in targeted delivery of doxorubicin and co-delivery of doxorubicin and resveratrol, MICROPOR. AND MESOPOR MAT, vol 375, 2024, DOI10.1016/j.micromeso.2024.113176
3. Călin, M. MIHĂILESCU, Petrescu, Lisievici, Tarbă, Călin, Ungureanu, Pasov, Brehar, Gorgan, Moisescu, Savopol, Grading of glioma tumors using digital holographic microscopy, Heliyon, Vol. 10, Iss. 9, 2024, DOI10.1016/j.heliyon.2024.e29897
4. Olăreț, Dinescu, Dobranici, Ginghina, Voicu, M. MIHĂILESCU Curti, Banciu, Sava, Amarie, Lungu, Stancu Osteoblast responsive biosilica-enriched gelatin microfibrillar microenvironments, Biomaterials Advances, 161, 213894, 2024, 10.1016/j.bioadv.2024.213894
5. Tudor, M., Popescu, R.C., Negoita, R.D., Gilbert A., Ilișanu M.A., Temelie M., Dinischiotu A, Chevalier F., M. MIHĂILESCU Savu D. I., In vitro hyperspectral biomarkers of human chondrosarcoma cells in nanoparticle-mediated radiosensitization using carbon ions, Sci Rep 13, 14878, 2023, 10.1038/s41598-023-41991-9
6. M. MIHĂILESCU, Micela L, Pleava A. M., Tarba N, Scarlat E, Negoiță R.D., Moisescu M, Savopol T, Method for nanoparticles uptake evaluation based on double labeled fluorescent cells scanned in enhanced darkfield microscopy, Biomedical Optics Express, vol. 14, iss, 6, 2796-2810, 2023, 10.1364/BOE.490136
7. Pleava, Negoita, Ilisanu, M. MIHĂILESCU, Morega, Calin, Scarlat, Paun, Holographic microscopy of cell compartments to build realistic models for electric field simulations, Rom. Rep. Phys. 75 (1), 602, 2023

8. Miclea L, M. MIHĂILESCU, Tarba N, Brezoiu A, Sandu A, Mitran R, Berger D, Matei C, Moisescu M, Savopol T, Evaluation of intracellular distribution of folate functionalized silica nanoparticles using fluorescence and hyperspectral enhanced dark field microscopy, Nanoscale, 14, 35, 12744-12756, 2022, https://doi.org/10.1039/D2NR01821G
9. Dosan V-L, Naziru A, M. MIHĂILESCU, Ionicioiu R, Construction and characterization of a Sagnac-based entangled-photon source, Rom. Rep. in Phys, 74, 4, 119, 2022
10. Scarlat E, M. MIHĂILESCU, IA Păun, Identification of independent modes in two inputs free space communications system, Optics and Lasers in Engineering 136, 106320, 2021, https://doi.org/10.1016/j.optlaseng.2020.106320
11. Călin VL, M. MIHĂILESCU, N Tarba, AM Sandu, E Scarlat, MG Moisescu, T Savopol, Digital holographic microscopy evaluation of dynamic cell response to electroporation, Biomedical Optics Express 12 (4), 2519-2530, 2021 https://doi.org/10.1364/BOE.421959
12. Păun IA, Mustaciosu CC, M. MIHĂILESCU, BS Calin, AM Sandu, Magnetically-driven 2D cells organization on superparamagnetic micromagnets fabricated by laser direct writing, Scientific Reports 10 (1), 1-12, 2020 https://doi.org/10.1038/s41598-020-73414-4
13. Păvăloiu R-D, F Sha'at, C Bubueanu, M Deaconu, G Neagu, M Sha'at, M Anastasescu, M. MIHĂILESCU, C Matei, G Nechifor, D Berger, Polyphenolic extract from Sambucus ebulus L. leaves free and loaded into lipid vesicles, Nanomaterials 10 (1), 56, 2020 https://doi.org/10.3390/nano10010056
14. Păun I A, Calin B S, Mustaciosu C C, M. MIHĂILESCU, C S Popovici, C R Luculescu, Osteogenic cells differentiation on topological surfaces under ultrasound stimulation, Journal of Materials Science 54 (16), 11213-11230, 2019, https://doi.org/10.1007/s10853-019-03680-9
15. Panaitescu D M, Frone A N, Chiulan I, Nicolae C A, Trusca R, Ghiurea M,Gabor A R, M. MIHĂILESCU, Casarica A, Lupescu I, Role of bacterial cellulose and poly(3-hydroxyhexanoale-co-3-hydroxyoctanoale) in poly(3-hydroxibutirate) blends and composites, Cellulose 25, 10, 5569-5591, 2018, https://doi.org/10.1007/s10570-018-1980-3,
16. Calin, V. L., M. MIHĂILESCU, M., Scarlat, E. I., Baluta, A. V., Calin, D., Kovacs, E., Savopol, T., & Moisescu, M. G. Evaluation of the metastatic potential of malignant cells by image processing of digital holographic microscopy data. FEBS Openbio, 7(10), 1527–1538 2017, https://doi.org/10.1002/2211-5463.12282, IF: 1.782, AIS: 0.568.
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18. Calin VL, M. MIHĂILESCU Mihale N, Baluta AV, Kovacs E, Savopol T and Moisescu MG Changes in optical properties of electroporated cells as revealed by digital holographic microscopy. Biomed Opt Express 8, 2222–2234 2017, https://doi.org/10.1364/BOE.8.002222, IF: 3.482, AIS: 0.978.
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20. M. MIHĂILESCU, Paun, I.A., Zamfirescu, CR Luculescu, AM Acasandrei, M Dinescu Laser-assisted fabrication and non-invasive imaging of 3D cell-seeding constructs for bone tissue engineering. J Mater Sci 51, 4262–4273 (2016). https://doi.org/10.1007/s10853-016-9723-z.
21. M. MIHĂILESCU, IA Paun, E Vasile, RC Popescu, AV Baluta, DG Rotaru, Digital off-axis holographic microscopy: from cells visualization to phase shift values, ending with physiological parameters evolution, Rom J Phys 61, 1009-1027, 2016
22. M. Mihăilescu, R.C. Popescu, A. Matei, A. Acasandrei, I.A. Paun, M. Dinescu, Investigation of osteoblast cells behavior in polymeric 3D micropatterned scaffolds using digital holographic microscopy, Appl. Optics 53, 22, p. 4850-4858, 2014. https://doi.org/10.1364/AO.53.004850.
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27. M. MIHĂILESCU, Natural quasy-periodic binary structure with focusing property in near field diffraction pattern, Optics Express, 18, 12, 12526-12536, 2010, https://doi.org/10.1364/OE.18.012526.