

PERSONAL INFORMATION

IOAN TURCU



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Sex M | Date of birth 07 03 1955 | Nationality romanian

WORKPLACE

National Institute for Research and Development of Isotopic and Molecular Technologies, INCDTIM Cluj-Napoca, Romania.

WORK EXPERIENCE

2005 - present / Senior researcher I / Head of „Molecular & Biomolecular Physics” Department / National Institute for Research and Development of Isotopic and Molecular Technologies, Cluj-Napoca, Romania;

2000 - 2005 / Senior researcher I / Head of "Biophysics & Environmental Physics” Laboratory / National Institute for Research and Development of Isotopic and Molecular Technologies, Cluj-Napoca, Romania;

1983 - 2000 / Scientific researcher / National Institute for Research and Development of Isotopic and Molecular Technologies, Cluj-Napoca, Romania

1980 - 1983 / Scientific researcher / National Institute of Material Physics, Bucharest - Măgurele, Romania

EDUCATION AND TRAINING

1992-1996 PhD in physics, Institute of Atomic Physics, Bucharest – Măgurele, Romania;

1979-1980, Master degree in physics , Bucharest University; Romania;

1975-1979 Bachelor of science degree in physics, Bucharest University, Romania;

1970-1974 "Emil Racoviță" High School, Cluj-Napoca, România

PERSONAL SKILLS AND COMPETENCES

Mother tongue Romana

Other language

	Understanding		Speaking		Writing
	Listening	Reading	Spoken interaction	Spoken production	
English	C2	C1	C2	C2	C1
French	B1	C2	A1	A1	A1

- President of the INCDTIM Research Council (2000 – 2008; 2014 – 2018; 2018 - 2022);
- Member of Romania - JINR Committee (2019 – 2023);
- Member of the National Research Council - President of the Commission "Exact Sciences" (2015 – 2016);
- President of the Romanian Society for Pure and Applied Biophysics (2009 – 2013);
- Vice-president of the Executive Committee of the Romanian Society of Physics (2017 – 2020);
- President of the Section: "Biophysics and Medical Physics" of the Romanian Society of Physics (2009 – 2017);
- Representative of Romania to EBSA (European Biophysical Societies' Association) (2009 – 2013);
- Head of „Molecular & Biomolecular Physics” Department / Research Team Leader "Molecular & Biomolecular Technologies" (2009 – present).

Areas of competence

- The effects of strong electric fields on biological cells:
 - Dielectrophoresis and electrorotation;
 - Electropermeabilization of biomembranes;
 - Electrofusion of biological cells.
- New diagnosis tools based on small angle scattering of laser beams on biological cells;
- Self-assembly of supramolecular systems, molecular recognition processes;
- Interaction between antimicrobial peptides (AMPs) and biomembranes.

Areas of Interest

- Molecular biophysics;
- Molecular recognition self-organizing processes; and self-assembling of supramolecular systems;
- Fabrication and characterization of supramolecular structures with controlled architecture and functionality;
- Molecular devices, molecular electronics;
- Mechanisms of AMPs/biomembrane interactions.

Coordinated research projects
Director / Project Responsible
(selection - last years)

1. C1.2.PFE-CDI.2021/532, 2022 – 2024 “*Strengthening the institutional performance of INCDTIM Cluj-Napoca (CONSOL-ITIM)*” – project director;
2. PN-III-P2-2.1-PED-2021-3342, 2022 – 2024, “*Ready-to-use flexible wound dressing with synergistic photothermal and antimicrobial capabilities*” (**SmartWoundPatch**) - partner team leader;
3. PN-III-P2-2.1-PED-2021-1998, 2022 – 2024, “*Development of a highly sensitive and selective SERS aptasensor for medical diagnosis*” (**NanoAptaDia**) - partner team leader;
4. Complex projects completed in consortia CDI (FPRD) PN-III-P1-1.2-PCCDI-2017-0010, 2018 – 2021 “*Emerging molecular technologies based on micro and nano-structured systems with biomedical applications*” (**TEHNOBIOMED**) – project director;
5. Complex projects completed in consortia CDI (FPRD) PN-III-P1-1.2-PCCDI-2017-0178, 2018 - 2021 “*Underwater geological structures favorable to the generation and accumulation of biogenic methane*” - associated geobiochimic processes (**uBioGas**) - partner team leader;
6. Complex projects completed in consortia CDI (FPRD) PN-III-P1-1.2-PCCDI-2017-0387, 2018 - 2021 “*Emerging technologies for the industrial capitalization of 2D structures (graphene and nongraphenic)*” (**EMERG2Ind**) - partner team leader;
7. PNII-ID-PCCE-2011-2-0027, 2012 – 20016 “*Ion sensing and separation through modified cyclic peptides, cyclodextrins and protein pores*” - partner team leader;
8. Large infrastructure program, 2008 – 2012 “*Molecular and Biomolecular Physics Department Upgrading*” **6 500 000 EURO** – project director;
9. PN II ID_32/2008 , 2008 – 2010 “*Organization of the coding sequence of the microbial genome; autoregressive modelling*” – project director;
10. CEEEX Nr. 2-CEX-06-11-93/2006, 2006 – 2008 “*Self-assembled bidimensional supramolecular structures based on functionalized organic molecules*” – project director;

Book chapters

1. L. Buimaga–Iarinca, D. Marconi, A. Colniță, C. Morari, **I. Turcu**, “*Molecular Devices: From Rational Design to Functional Units, Nanotechnologies and Nanomaterials for Various Applications*”, Eds. Maria Zaharescu, Marius Enăchescu, Dan Dascălu, **Romanian Academy Publishing House**, București, ISBN 978-973-27-2954-8 (2018) 26 – 42.
2. A. Colniță, D. Marconi, **I. Turcu**, “*A Review - Application of Molecular Beam Epitaxy*”, **Biophysics for Biomedical and Environmental Sciences**, Ed. Monica Florescu, **Transilvania University Press**, ISBN 978-606-19-0768-7 (2016) 141-148.
3. D. Marconi, A. Colniță, **I. Turcu**, “*A Hybrid Top-Down, Bottom-Up Approach to Fabrication of High Quality Interdigitated Electrodes*”, **Biophysics for Biomedical and Environmental Sciences**, Ed. Monica Florescu, **Transilvania University Press**, ISBN 978-606-19-0768-7 (2016) 149-160.
4. **I. Turcu**, “*Quasi-ballistic light scattering on particulate media*” in **Progress in Optics Research**, ed. Maximilian N. Schulz, **Nova Science Publishers, Inc. New York**, ISBN: 978-1-60456-110-4 (April 15, 2009) 103-128.

Published Scientific papers

78 published scientific papers, mostly in ISI-ranked journals and about 160 scientific contributions to specialized Congresses and Conferences;

Scientific papers
(selection - last years)

1. Mina Răileanu, Raluca Borlan, Andreea Campu, Lorant Janosi, **Ioan Turcu**, Monica Focsan, Mihaela Bacalum, *No country for old antibiotics! Antimicrobial peptides (AMPs) as next-generation treatment for skin and soft tissue infection*, **Int. J. Pharm.** **642** (2023) 123169, doi: [10.1016/j.ijpharm.2023.123169](https://doi.org/10.1016/j.ijpharm.2023.123169).
2. Ioana A. Brezeştean, Daniel Marconi, Alia Colniţă, Alexandra Ciorîţă, Septimiu C. Tripon, Zina Vuluga, Mihai Cosmin Corobea, Nicoleta Elena Dina, and **Ioan Turcu**, *Scanning Electron Microscopy and Raman Spectroscopy Characterization of Structural Changes Induced by Thermal Treatment in Innovative Bio-Based Polyamide Nanocomposites*, **Chemosensors**, **11** (2023) 28. doi: [10.3390/chemosensors11010028](https://doi.org/10.3390/chemosensors11010028).
3. Alia Colniţă, Daniel Marconi, Nicoleta Elena Dina, Ioana Brezeştean, Diana Bogdan, **Ioan Turcu**, *3D silver metallized nanotrenches fabricated by nanoimprint lithography as flexible SERS detection platform*, **Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy** **276** (2022) 121232, (11pp) doi: [10.1016/j.saa.2022.121232](https://doi.org/10.1016/j.saa.2022.121232).
4. Alia Colniţă, Daniel Marconi, Ioana Brezeştean, Roxana-Diana Paşca, Irina Kacso, Lucian Barbu-Tudoran & **Ioan Turcu***, *High-Throughput Fabrication of Anti-Counterfeiting Nanopillar-Based Quick Response (QR) Codes Using Nanoimprint Lithography*, **Anal. Lett.** **54 (1-2)** (2021) 302-313, doi: [10.1080/00032719.2020.1769123](https://doi.org/10.1080/00032719.2020.1769123).
5. Cezara Zagrean-Tuza, Augustin C. Mot, Tomasz Chmiel, Attila Bende, **Ioan Turcu***, *Sugar matters: sugar moieties as reactivity-tuning factors in quercetin O-glycosides*, **Food & Function** **6** (2020) doi: [10.1039/D0FO00319K](https://doi.org/10.1039/D0FO00319K).
6. Andreea Campu, Frederic Lerouge, Ana-Maria Craciun, Teodora Murariu, **Ioan Turcu**, Simion Astilean and Focsan Monica, *Microfluidic platform for integrated plasmonic detection in laminar flow*, **Nanotechnology** **31 (33)** (2020) 335502 (9pp) doi: [10.1088/1361-6528/ab8e72](https://doi.org/10.1088/1361-6528/ab8e72).
7. Alia Colniţă, Daniel Marconi, Radu Tiberiu Brăţfălean, **Ioan Turcu***, *Single-step fabrication of homoepitaxial silicon nanocones by molecular beam epitaxy*, **Appl. Surf. Sci.** **436** (2018) 1163 – 1172, doi: [10.1016/j.apsusc.2017.12.136](https://doi.org/10.1016/j.apsusc.2017.12.136)
8. M. Bacalum, L. Janosi, F. Zorila, A.-M. Tepes, C. Ionescu, E. Bogdan, N. Hadade, L. Craciun, I. Grosu, **I. Turcu***, Mihai Radu*, *Modulating short tryptophan- and arginine-rich peptides activity by substitution with histidine*, **Biochimica et Biophysica Acta (BBA) - General Subjects** (2017) doi: [10.1016/j.bbagen.2017.03.024](https://doi.org/10.1016/j.bbagen.2017.03.024);
9. F. A. Martin, D. Marconi, S. Neamtu, T. Radu, M. Florescu, R. Turcu, C. Lar, N. D. Hădade, I. Grosu, **I. Turcu***, *“Click” access to multilayer functionalized Au surface: A terpyridine patterning example*, **Mater. Sci. Eng. C Mater. Biol. Appl.** , **75**, 1343-1350 (2017) doi: [10.1016/j.msec.2017.03.033](https://doi.org/10.1016/j.msec.2017.03.033);
10. A. Colniţă, D. Marconi, **I. Turcu**, *Fabrication of Interdigitated Electrodes Using Molecular Beam Epitaxy and Optical Lithography*, **Anal. Lett.** **49 (3)** (2016) 378-386. doi: [10.1155/2014/514508](https://doi.org/10.1155/2014/514508)

ADDITIONAL INFORMATION

- The bifurcation theory describing the electrorotation of microparticles developed in a series of papers published in **J. Phys. A: Math. Gen.** can be found in the literature as "Turcu's Bifurcation Theory" - Thomas B. Jones (Rochester University, USA), "**Electromechanics of Particles**", **Cambridge University Press**, (1995)<http://catdir.loc.gov/catdir/samples/cam034/94038849.pdf>; E. Dorjotov et al. **Liquid Crystals**, **35** (2008) 149 – 155; T. Mochizuki **ACS Omega**, **3** (2018) 1031–1040; T. Saghaei et al. **Scientific Reports** **13** (2023) 20466.
- Reviewer to the following journals:
The Journal of Physical Chemistry, Chemical Physics Letters, Microchimica Acta, Journal of Agricultural and Food Chemistry, Journal of Macromolecular Science - Pure and Applied Chemistry, Central European Journal of Physics, IEEE Transaction in Industry Application, Journal of Electrostatics, Electro-and Magnetobiology, Optics Express, Journal of Scientific Research and Reports, Romanian Journal of Physics, Romanian Journal of Biophysics;
- Member of the Editorial Board of „Romanian Journal of Biophysics”;
- Reviewer in doctoral committees: 22 PhD theses in the range 2005-2021.

Date: February 22, 2024

Signature

