

CURRICULUM VITAE

Name, Surname:	Mariana Ioniță		
Date of birth:		Sex:	F
Nationality:	Romanian		
Researcher unique identifier(s) (ORCID, Researcher ID etc.):	https://orcid.org/0000-0002-9563-7148 Scopus Author ID: 7003938586 Web of Science Researcher ID: C-5664-2012		
Personal link from the platform at https://www.brainmap.ro/	U-1700-035F-9001 https://www.brainmap.ro/mariana-ionita		
Functia Vizata in A3D BIO			

Education

Year	Faculty/department - University/institution - Country
2019	Habilitation Thesis – Chemical Engineering National University of Science and Technology POLITEHNICA of Bucharest (POLITEHNICA Bucuresti), Romania Thesis title: Graphene based biomaterials: opportunities, perspectives, and challenges
2008	Doctor of Philosophy in Bioengineering Department of Bioengineering, POLITECNICO di Milano, Italy Thesis title: Coupling experimental and computational methods for the evaluation of permeability of bioartificial polymeric membrane materials
2008	Doctor of Philosophy in Chemistry Faculty of Applied Chemistry and Materials Science, POLITEHNICA Bucuresti Thesis title: Innovative methods to advance in synthesis of tailored materials for applications in electrochemistry processes
2001	M.Sc. degree in Industrial Chemistry Faculty of Industrial Chemistry, POLITEHNICA Bucuresti, Romania Thesis title: Simulation of methyl methacrylate polymerization and study of initiator influence

Positions - current and previous

Year	Job title – Employer - Country
2011-present	Professor/Associate Professor POLITEHNICA Bucuresti, Faculty of Medical Engineering, Romania
2024- present	Chair of Centre of Excellence in Bioengineering POLITEHNICA Bucuresti, Centre of Excellence in Bioengineering, Romania
2016-present	Research Group leader Advanced Polymer Materials Group, POLITEHNICA Bucuresti, Romania
2009-present	Project co-ordinator / Project manager POLITEHNICA Bucuresti, Romania
2003-2008	Research Fellow -Marie-Curie Fellowship, 6 th FP-NMP3-CT-2005-013644 / 6 th FP-MEST-CT-2004-504465 / 5 th FP-EU HPMT-CT-2001 POLITECNICO di Milano / Universita degli STUDI DI MILANO, Italy

Project management experience

Over 12 nationally and internationally funded research projects.

Year	Project title - Role – Funder – Budget – link to project webpage
2009-2011	Coupling multiscale molecular modelling with experiments for the design and characterization of nanostructured composite materials, Project co-ordinator, PNII-RP 12/2009, 460.000 RON
2012-2016	Developing new graphene-polymer composites biomaterials for scaffold fabrication with applicability in bone repair by coupling multiscale molecular modelling and experiments, Project co-ordinator, PN-II-PCCA 140/2012, 2.000.000 RON
2013-2016	Multi-scale computational approach and experiments towards knowledge-based design of polymer-graphene membrane materials for selective gas separation, Project co-ordinator, PN II TE 17/2013, 705.000 RON
2016-2021	A novel graphene biosensor testing osteogenic potency; capturing best stem cell performance for regenerative medicine-GRABTOP, Project manager, POC-A1-A1.1.4-E2015, ID P_37_221-GRABTOP, 8.088.385,50 RON, http://grabtop.upb.ro/
2018-2020	Super carbonaceous materials for selective separation; multi-scale computer-aided molecular design and engineering-SUCCESS, Project co-ordinator, PN-III-TE 122/2018, 449.950 RON
2022-2023	Mixed Reality e-learning platform dedicated to Medical Engineering (REALME), SEE Financial Mechanism, POLITEHNICA Bucuresti and Reykjavik University, Project coordinator, 21-COP-0017, 148.054,00 EURO, https://realme.chimie.upb.ro/
2022-2024	Toolbox for personalized bone regeneration; tailoring solutions for tomorrow (REOSTEOKIT), Project co-ordinator, Romania PN-III-PCE 103/2022, 1.200.000,00 RON, https://reosteokit.chimie.upb.ro/
2023-2026	Advanced & personalized solutions for bone regeneration and complications associated with multiple myeloma (REOSTEOMI), Institutional project co-ordinator, PNRR-III-C9-2022 – I8-760093 /23.05.2023, 6.970.685.00 RON, https://reosteomi.chimie.upb.ro/

Other relevant professional experiences

Year	Description - Role
2021-2025	Member of the National Council of Scientific Research Materials Science Commissions
2015-present	Expert-Evaluator / Rapporteur UEFISCDI / EU Funding HORIZON-MSCA-DN / MSCA-PF
2016-present	Member of Organizing Committee / Scientific Committee / Session Chair Chair of Transnational Multiplier Event-2023, Romania; Chair of International Conference 3D Modelling Techniques for BioMedical Engineering-2016, Romania; Co-Chair of Biomedical Winter School-2017 / Mixed-Reality Spring School-2023, University of Reykjavik, Iceland Scientific Committee – NanoMACH,-Trukey (https://www.nanomach.org/); BPC-Romania (https://www.bpc-apmg.upb.ro/index.html)
2018-2021	Member of editorial board Composite Part B: Engineering Journal
2022-2026	Guest Editor -for over 5 special issues <i>e.g.</i> Application of Graphene-Based Sensors in Biomolecular Detection - Biosensors, 2023; Recent Advances in Molecularly Imprinted Polymers and Emerging Polymeric Technologies for Hazardous Compounds – Polymers, 2025; Engineering the Future: Advances in 3D Printing Formulations for Biomedical Solutions-Materials, 2026.
2019	Awarded the Daniel Bunea Prize by the Romanian Society of Biomaterials, Romania

2024	Awarded the Nicolae Vasilescu Karpen Prize, Romanian Research Gala alongside the Advanced Polymer Materials Group, POLITEHNICA Bucuresti, Romania
2026	Awarded 3 rd Prize for the paper AI-driven computational workflows for scalable innovative materials design by Ai4X-Accelerate Conference 2026, Singapore
2009-present	Lecturing frequently at national and international meetings, over 130 presentations as a keynote speaker (NanoBio&Med2025); plenary lectures (STAMD-2026-Turkey; 17 th ICPAM-2025), or symposia presentations
2025 / 2026	Invited professor -Catalan Institute of Nanoscience and Nanotechnology (ICN2), Bellaterra (Barcelona), Spain
11.2024	Invited professor -Tohoku University, Sendai, Japan
2016 / 2023	Invited Professor - University of Reykjavik, Iceland

Publication related to the project scientific area

1. Dobrișan, M.R.; Toader, A.G.; Chiticaru, E.A.; Vlăsceanu, G.M.; Popescu, R.C.; Nicoara, A.I., Podaru, A. I.; Toader, G.; Rotariu, T.; **Ionita M.**; Nanostructured Gelatin-Gellan Inks Double Reinforced with Cellulose Nanofibrils and Graphene Derivatives for **3D Printing** in Bone Regeneration Applications. *Materials Today Advances*, **I.F. 8**, Vol. 28: 100621, 2025.
2. Vlăsceanu, G.M.; Zamfir, C.I.; Baltă, C.; Herman, A.; Ciceu, A., Duma, A.M., **Ionita, M.**; Popescu, R.C.; Hermenean, A.; Functionalized Reduced Graphene Oxide-Based Nanocomposite Hydrogels for Enhanced Osteogenesis in Bone Tissue Engineering. *Advanced Healthcare Materials*, **I.F. 11**, Vol. 14, 2025.
3. Oprea, M.; **Ioniță, M.**; Antisense Oligonucleotides-Based Approaches for the Treatment of Multiple Myeloma. *International Journal of Biological Macromolecules*, **I.F. 8.7**, Vol. 291: 139186, 2025,
4. Chiticaru, E.A.; **Ioniță, M.**; Commercially Available **Bioinks** and State-of-the-Art Lab-Made Formulations for Bone Tissue Engineering: A Comprehensive Review. *Materials Today Bio*, **I.F. 11**, Vol. 29: 101341, 2024.
5. Cernencu, A.I., **Ioniță, M.**; The current state of the art in gellan-based **printing inks** in tissue engineering, *Carbohydrates Polymers*, **I.F. 13.2**, Vol. 309, 12067, 2023.
6. Muraru S., **Ioniță M.**; Super Carbonaceous Graphene-based structure as a gas separation membrane: A Non-Equilibrium **Molecular Dynamics** Investigation, *Composites Part B: Engineering*, **I.F. 14**, 2020, Vol 196, 108140, 2020.
7. Vlăsceanu G.M., Iovu H., **Ioniță M.**; **Graphene inks** for the **3D printing** of cell culture scaffolds and related molecular arrays, *Composites Part B: Engineering*, **I.F. 14**, Vol. 162, 712-723, 2019.
8. **Ioniță, M.**, Crică, L.E., Voicu, S.I., Dinescu, S., Miculescu, F., Costache, M., Iovu, H.; Synergistic effect of carbon nanotubes and graphene for high performance cellulose acetate membranes in biomedical applications, *Carbohydrates Polymers*, **I.F. 13.2**, Vol 183, 2018, 50-61, 2018.
9. Cojocaru, E.; Chiticaru, E.A.; Vlăsceanu, G.M.; Nicolae, M.C.; Popescu, R.C.; Dobrișan, M.R.; Toader, G.A.; **Ionita, M.**; 3D Printing of Multicomponent **Polymeric Inks** Enables Hierarchical Hybrid Architectures for Bone Tissue Regeneration. *Materials Today Advances*, **I.F. 8**, Vol. 29: 100683, 2026
10. Mariana Ioniță, Jana Ghițman, Mihaela-Raluca Dobrișan, Georgian Alin Toader, Elena Ghighină, Elena Alina Chiticaru **3D printable** or **bioprintable** formulation based on alginate, k-carrageenan and spirulina, and method for obtaining a functional support, Application no. EP 26187715.3, 21epo/2026, *European Patent Office*, 2026.
- [11] **Ioniță, M.**; Prună, A. Polypyrrole/carbon nanotube composites: **Molecular modeling** and experimental investigation as anti-corrosive coating. *Progress in Organic Coatings*, 2011, 72(4), 647-652.
- [12] **Ioniță, M.**; Andreeva, D.; Roche, S.; Kostarelos, K.; Novoselov, K. **AI-guided** safe-by-design functional intelligent materials. *Nature Communications*, manuscript No. NCOMMS-26-047967, 2026.

13. Dobrișan, M.-R.; Toader, G.A.; Chitcaru, E.-A.; Zsunkuly, A.-C.; Roche, S.; Ioniță, M. "Advances in Artificial Intelligence-Driven Optimization of 3D (Bio)Printing for Tissue Regeneration: A State-of-the-Art Review." Manuscript submitted to *Virtual and Physical Prototyping*, Taylor & Francis, 2026, currently under peer review, Submission ID: 263677150

Narrative CV

Professor Mariana Ionita is a recognized **mentor** and **research leader** whose career embodies the highest standards of academic and scientific excellence, bridging high-impact global collaboration with breakthrough innovation and mentoring effectiveness. Mariana Ionita was appointed Professor to Faculty of Medical Engineering (2009) and Chair of Center of Excellence in Bioengineering (2024) at POLITEHNICA Bucuresti. Her mentoring record is both extensive and impactful, introducing new approaches to students (B.Sc., M.Sc. and PhD) e.g. computational chemistry, regenerative medicine with stem cells, and tissue engineering. Conversely, she leads cutting-edge laboratories within which students develop their research identity, over 50 student projects were developed in her laboratories since 2016. She established a young and highly motivated international research team.

Transnational collaborations She strategically expanded robust national and international collaborations across both academia (e.g. University of Oslo, Norway, Loughborough University, UK, Tohoku University- AF-2020227-B3, Japan, Vasile Goldis Western University Arad), and industry (Fiat Research Centre) to build a sustained, internationally integrated research ecosystem for pursuing exploratory interdisciplinary research.

Research Team A core pillar of Prof. Mariana Ioniță leadership is the strategic expansion of human capital and research infrastructure. She has established **four new cutting-edge laboratories** equipped with advanced technologies encompassing Computational Chemistry, Advanced Imaging Analysis, Cell Biology, and Molecular Biology in which she combines high-level science with dedicated mentorship, having served as a host laboratory for international **ATHENS program students** and supervised over 50 Bachelor's, Master's, and Doctoral theses over the past decade. She currently coordinates a multidisciplinary team comprising 2 MSc students, 4 PhD candidates, 2 Postdoctoral researcher, and 1 Experienced Researcher (ER) focused on translating innovative research into functional healthcare products. To accelerate talent cultivation, Prof. Ioniță strategically integrates her team with global academic leadership, maintaining active collaborative pipelines with **Prof. Vadim Silberschmidt**, Loughborough University [, **Project:** PNRR-III-C9-760093/2023] and **Prof. Jorge Burns**, University of Ferrara, [20, **Project:** POC-A1-P_37_221] alongside hosting regular on-site research visits from top-tier international scientists such as **Prof. Stephan Roche** (Catalan Institute of Nanosciences and Nanotechnology (ICN2)[12].

Research performance Her active research trajectory is mirrored by an extensive track record of **high-impact** and **top-cited publications** (e.g. DOI:10.1016/j.carbpol.2013.01.065 -460 citations) and durable international co-authorship (e.g. University of Reykjavik, Institute for Functional Intelligent Materials, National University of Singapore, University Hospital of Modena and Reggio Emilia, or FIAT Research Centre). She has co-authored four research monographs and more than 109 (**62 of the published in Q1 journals**) peer reviewed scientific papers, Hirsch index is 27 (according to Scopus), total number of citations 3200+, Scopus Author ID: 7003938586. Several of these papers represents key contribution to the field of **tissue engineering (26+ publications)** due to the outstanding contribution to this domain achieved by merging medicine, technology, biomaterials, in silico, in vitro and in vivo for the design and fabrication of structures with powerful functional responses and contributing to the definition of a novel class of **smart biomaterials / (bio)printable** optimized for tissue engineering (**29+ publications**). Furthermore, by combining **in silico (24+ publications)** investigation with **advanced formulations/hydrogels** and **3D fabrication workflows (10+ publications)** she has significantly accelerated the translation of the new biomaterials from conceptual science into feasible personalized artificial tissue. Her exploratory trajectory expands also into molecular therapeutics. Addressing the challenge of human multipotent stromal cell

(hMSC) **functional heterogeneity**, demonstrating for the first time that decorin and TGF- β 2 protein expression patterns can isolate non-bone-forming cells, discovery which has potential in optimizing the design of advanced stem cell therapies needed to reverse **abnormal cell functioning** [5+ **publications**]. Furthermore, the core methodology developed in her lab i.e. **hierarchical, multiscale computer-aided molecular modelling** coupled with knowledge-based design was successfully applied to achieve materials with tuneable transport properties, targeted drug delivery or to understand mechanisms unachievable otherwise (**26+ publications**). Building on her computational base, she pioneered the integration of machine-learning-driven inverse design, to develop context-dependent material architectures. Project: SEE-21-COP-0017]. **De adaugat aici lucrarea cu Raluca si o fraza** Her breakthroughs at the intersection of these fields have earned global recognition, including the 3rd Prize at the AI4X-Accelerate Conference 2026, Singapore, for her work on **AI-driven computational workflows** for scalable design of functional intelligent materials. Reflecting her standing in the field. She was officially commissioned by Editor Sunjie Ye to submit a perspective paper to Nature Communications (submitted June 2026- NCOMMS-26-047967A). This upcoming publication, titled **Designing Functional Intelligent (Bio)materials; Convergence of Artificial Intelligence and Sustainable Innovation** features co-authorship with some of the world's most visionary scientists, including Nobel Laureate Sir Konstantin Novoselov. This established, expertise across computational chemistry, smart biomaterials, advanced manufacturing and gene delivery, perfectly intersects to **A3D-BIO** project. Having effectively defined the current state of the art across the project four interconnected scientific directions it gives a profound understanding of the challenges within each domain. Conversely, it provides the precise insights and technical maturity required to systematically overcome the existing bottleneck in the fields and serve as a solid foundation for pushing the frontiers of knowledge during project execution.

Project Coordination Prof. Ionita has secured and executed a prolific portfolio of research projects exceeding 25 million RON funded by different funding bodies e.g. European Union (EU), the Executive Agency for Higher Education, Research, Development and Innovation Funding (UEFISCDI), EEA and Norway Grants (SEE Financial Mechanism) or other international institutions e.g Amanda Foundation, Japan (Grant AF-202227-B3, Icelandic Centre for Research (RANNIS)-Grant number 228340-051. She also participated in more than 15 national and international grants (HORIZON-WIDERA-2022-TALENTS-01 or HORIZON-CL4-2025-05MATERIALS-42-to be contracted). Reflecting her reputation in research, she was invited to join 3 international research consortia in the past year alone (ERC-2027-SyG in preparation, or HORIZON-CL4-2026-05-MAT-PROD-25 submitted).

Translation Science Another significant contribution to translational science is paved by her **intellectual property** portfolio: alongside two national BOPI, A/202100236-12/2022 patent and patent application-A/2025/00577, she recently submitted a prestigious **European Patent Office (EPO) application** (21epo/2026,) for a work dedicated to 3D bio-printable formulation which places her at the forefront of technology transfer within the national and regional research landscape.

Prof. Mariana Ionita is consistently ranked among the **Top 2%** of the world's most cited scientists according to the prestigious Stanford University & Elsevier database, within Enabling & Strategic Technologies field.