

PERSONAL INFORMATION

Family name, First name: **PINTEALA, Mariana**

Researcher unique identifier(s): 0000-0002-4021-982X; Researcher ID: B-8679-2011

Nationality: Romanian

URL for web site: <https://www.icmpp.ro>: “Petru Poni” Institute of Macromolecular Chemistry, Iasi, Romania (**ICMPP**) and <http://www.intelcentru.ro/en>: Centre of Advanced Research in Bionanoconjugates and Biopolymers – (IntelCentre) department of ICMPP

• EDUCATION

- 16/06/1995 PhD, Chemical Engineering and Environmental Protection, Department of Natural and Synthetic Polymers, “Gh. Asachi” Technical University (TUIASI), Iasi, Romania
- 1979-1984 Bachelor & Master in Chemical Engineering, Organic Chemistry (TUIASI), (formerly “Polytechnic Institute”), Iasi, Romania

• CURRENT POSITION(S)

- 2007-present Researcher grade I, ICMPP, Iasi, Romania
- 2011-present Director of IntelCentre Department, ICMPP, Iasi, Romania

• PREVIOUS POSITIONS

- 1996-2006 Researcher grade II (2000-2006), Researcher grade III (1996-2000) at ICMPP, Iasi, Romania
- 1990-1995 Researcher, at ICMPP, Iasi, Romania
- 1987-1990 Engineer (MEng) at ICMPP, Iasi, Romania
- 1986-1987 Engineer (MEng) at Antibiotics Research Institute, Iasi, Romania
- 1984-1987 Junior Engineer at Antibiotics Factory, Iasi, Romania

• POST-DOCTORAL STAYS

- 2000-2008 23 months at Detroit Mercy Univ. (host: Prof. S. Schlick), USA
- 1996-1998 12 months at CNRS-Evry-Val d'Essonne University, Paris, France (host: Prof. H. Cheradame)

• FELLOWSHIPS AND AWARDS

- 2017 “C. Simionescu” Award for excellence in macromolecular chemistry Romanian International Chapter of ACS - ACS Chemistry for life/2017
- 2016-2017 Senior Fulbright fellowship/2016
- 2015 Honorary diploma of the Romanian Chemical Society
- 1994 “N. Teclu” Prize of the Romanian Academy, is assigned only once for the same person

• SUPERVISION OF GRADUATE STUDENTS AND POSTDOCTORAL FELLOWS

- 2011-2019 Number of Postdocs: 11; PhD: 11 defended and 4 on-going; Master Students: 6; Mentor for 2 post doc projects at ICMPP financed by UEFISCDI.

• ORGANISATION OF SCIENTIFIC MEETINGS

- Scientific committee: **2013** - 12th International Conference on Colloid and Surface Chemistry, May 9-11, 2013, Iasi, Romania (<https://icmpp.ro/events/conferences/ccsc2013.html>); **2018** - Balkan Fungus 2018 September 13-15, 2018, Timișoara, Romania (<http://balkanfungus.eu/>)
- 2017, 2018 Organizer of CRISTOFOR I. SIMIONESCU SYMPOSIUM Frontiers of Macromolecular and Supramolecular Science Symposia, (<https://www.icmpp.ro/ro/events>)

- **INSTITUTIONAL RESPONSIBILITIES**

- 2017-present Member of several Advisory Boards of doctoral school: “Grigore T. Popa” Univ. of Medicine and Pharmacy, Iasi; “Al.I. Cuza” Univ., Iasi; “Gh. Asachi” Technical Univ., Iasi
- 2010-present Coordination of IntelCentre depart. from scientific and managerial point of view. Main scientific activities: the synthesis and characterization of biomimetic materials with biomedical applications and synthesis of polymers/Copolymers (living systems, radical)
- 2012-present Coordination and implementation of different projects: 2021-2023 PN-III-P4-ID-PCE-2020-1523, Versatile molecular vectors with tailored carrying and actuating abilities, dedicated to gene and drug delivery in fight against cancer (240 000 €); 2015-2020 H2020 project, no. 667387,– “Laboratory of supramolecular chemistry for adaptive delivery systems era chair initiative” (http://www.intelcentru.ro/suprachem_lab/ 2.4€M) and, also, I coordinated 4 EU bilateral, 2 PCCDI national projects and 2 grants with industry (Zeelendia-Holland, Corthotec-UK)
- 2011-present Member of the scientific council of ICMPP in charge with decisions concerning ICMPP organisation and functioning
- 2011-present Scientific member for PhD and habilitation thesis thesis: 15 in Romania, 1 Karunya University, India (2014); Nice University (2015); Nanyang Technological University (2014)
- 2011-present Supervisor of PhD thesis: 11 defended and 4 in progress, at ICMPP, mentor for 2 postdoc national projects
- 2010-present Coordination of IntelCentre department from scientific and managerial point of view. Main scientific activities: the synthesis and characterization of biomimetic materials with biomedical applications and synthesis of polymers/Copolymers (living systems, radical)

- **REVIEWING ACTIVITIES**

- 2020-present Associate Editor: *Molecules* and *Journal of Enzyme Inhibition and Medicinal Chemistry*
- 2017-present Member of the National Council for Attesting Titles, Diplomas and Certificates, Ministry of Education, Romania (<http://www.cnatdcu.ro/paneluri-cnatdcu/incepand-cu-data-de-7-septembrie-2012/matematika-si-stiinte-ale-naturii/comisia-de-chimie/>)
- 2017-present Evaluator/Rapporteur for Romanian National Science Council, Ministry of Education
- 2010-present Peer reviewer: ELSEVIER (*J Mol Liq, Mater Sci Eng C, Carbohyd Polym, J Mol Catal B Enzym, Chem Eng J, Bioorg Chem, Arab J Chem*), ACS (*Macromolecules, ACS Nano*), RSC (*Phys Chem Chem Phys*), MDPI (*Polymers, Molecules*)

- **MEMBERSHIPS OF SCIENTIFIC SOCIETIES (if applicable)**

- 2010-present Association of Romanian Engineers (<https://www.feani.org/members/romania>) and Romanian Chemical Society (<http://www.schr.ro>)

- **MAJOR COLLABORATIONS**

**Prof. Aatto Laaksonen*, in biomodelling: from molecules to populations (<http://www.intelcentru.ro/5D-nanoP/>), Stockholm University, Sweden; **Prof. Claudiu T. Supuran*, in selective inhibitors and activators of carbonic anhydrase, Pharmaceutical and Nutriceutical Sciences dept., Florence Univ., Italy; **Prof. emeritus Marc Abadie* in new materials for aircraft manufacturing, Montpellier Univ., France; **Prof. Louise De Cola* in stimulus responsive breakable materials for the targeted delivery of small RNAs or other biomolecules in vivo, Louis Pasteur Strasbourg University, France; **Prof. Danny O'Hare* in biosensors, Department of Bioengineering, Imperial College, London, UK; **Dr. Clemente Capasso* in enzymatic degradation of PET, Institute of Biosciences and Bioresource, Naples, Italy; **Dr. Mihai*

Barboiu in synthetic supramolecular materials, Institut Européen des Membranes, Montpellier, France; **Acad. Maya Simionescu*, in the area of mimicking living matter mechanisms by five-dimensional chemistry, “N. Simionescu” Institute of Cellular Biology and Pathology, Bucharest, Romania.

- **TEN YEARS TRACK RECORD**

Dr. Mariana Pinteala is a co-author of about **179** papers, has a Hirsch index of **26** and more than **2080** citations (Google Scholar) (<https://scholar.google.com/citations?user=npr0z-cAAAAJ&hl=en>)

Brief description: Based on my previous experience in the field of supramolecular chemistry and its related areas, nanotechnology and nanomedicine, I found that realistic and advanced approaches cannot be developed at a competitive level without a proper research infrastructure, both in instrumental and in human terms. In this context, I have proposed and coordinated a large-scale project (5 MEuro from EU structural Funds, between 2009-2012) that led to the development of a versatile infrastructure, “Centre of advanced research in bionanoconjugates and biopolymers” (www.intelcentru.ro, *IntelCentre*), which later allowed me the creation of a specialized group (18 members) and attracting funds (approx 15 MEuro) to develop field of supramolecular chemistry and its related areas (the design, synthesis and testing of nanoconjugates for transport and release of genes and drugs). Between 2021-2023, the IntelCentre will be developed, through another project (5 MEuro), being a project in synergy with the H2020 ERA CHAIR SupraChem Lab project that I have coordinated (667387).

As coordinator, representative research projects are: *2016-2020 H2020 ERA CHAIR SupraChem Lab project (667387, 2.5 MEuro) – “*Laboratory of supramolecular chemistry for adaptive delivery systems era chair initiative*”, *2020-2023 PNIII-P4-ID-PCE-2020-1523 (240 000 Euro)- “*Versatile molecular vectors with tailored carrying and actuating abilities, dedicated to gene and drug delivery in fight against cancer*”; * 2012-2016 PN-II-ID-PCCE-2011-2-0028 (1.8 MEuro) – „*Biologically inspired systems for engineered structural and functional entities*”). All the projects I coordinated had an inter- and multi-disciplinary nature, involving high expertise in chemistry, biochemistry, physics and biology and had the support of scientific personalities (of which I can mention Nobel Prize in supramolecular chemistry Jean-Marie Lehn, Prof. Claudiu Supuran, Dr. Clemente Capasso, Prof. Aatto Laaksonen, Dr. Mihail Barboiu etc.

In the period 2012-2021 more than 300 papers in ISI journals were published by the group.

Representative publications

After 2012, I make use of the CDs versatility in producing more and more sophisticated supramolecular architectures, publishing several papers centred on the formation of inclusion complexes and (pseudo) polyrotaxanes structures with therapeutic molecules (drugs or genes) [1-3]. Also, I proposed the increasing of polyrotaxane solubility by using a suitable ionic liquid [4].

1. N Marangoci, D Timpu, A Corciova, C Mircea, AR Petrovici, A Nicolescu, EL Ursu, V Nastasa, AC Bostanaru, M Mares, M Pertea, **M Pinteala***, β -Cyclodextrin as a functional excipient used for enhancing the diminazene aceturate bioavailability. *Pharmaceutics* **2019**, 11, 295 (Q1-Pharmacology & Pharmacy; 2 citations).

2. R Ardeleanu, AI Dascalu, A Neamtu, D Peptanariu, CM Uritu, SS Maier, A Nicolescu, BC Simionescu, M Barboiu, **M Pinteala***, Multivalent polyrotaxane vectors as adaptive cargo complexes for gene therapy. *Polym Chem* **2018**, 9, 845-859 (Q1-Polymer Science; 18 citations).

3. N Marangoci, SS Maier, R Ardeleanu, A. Arvinte, A Fifere, AR Petrovici, A Nicolescu, V Nastasa, M Mares, SA Pasca, RF Moraru, **M Pinteala***, A Chiriac, Low toxicity β -cyclodextrin-caged 4,4'-bipyridinium-bis(siloxane): synthesis and evaluation. *Chem Res Toxicol* **2014**, 27, 546-557 (Q2-Chemistry, Medicinal; 7 citations).

4. N Marangoci, R Ardeleanu, L Ursu, C Ibanescu, M Danu, **M Pinteala***, BC Simionescu, Polysiloxane ionic liquids as good solvents for β -cyclodextrin-polydimethylsiloxane polyrotaxane structures, *Beilstein J Org Chem* **2012**, 8, 1610-1618 (Q2-Chemistry, Organic; 7 citations).

In the field of core-shell nano-scale carriers, I proposed fullerene or cyclic siloxane derivatives [5] able to act as gene vectors and the resulted polyplexes exhibited transfection efficiency higher than the

commercial SuperFect®. In 2020, we have demonstrated that the nanocarriers/short hairpin polyplexes are able to efficiently down-regulate Runx2 mRNA and protein expression, leading subsequently to a significant reduction in the expression of osteogenic proteins in osteoblast-committed valvular interstitial cells [6].

5. CM Uritu, M Calin, SS Maier, C Cojocaru, A Nicolescu, D Peptanariu, CA Constantinescu, D Stan, M Barboiu, **M Pinteala***, Flexible cyclic siloxane core enhances the transfection efficiency of polyethylenimine-based non-viral gene vectors. *J Mater Chem B* **2015**, 3, 8250-8267 (**Q2**-Materials Science, Biomaterials; 18 citations).

6. G Voicu, D Rebleanu, CA Constantinescu, EV Fuior, L Ciortan, I Droc, CM Uritu, **M Pinteala**, I Manduteanu, M Simionescu. Nano-polyplexes mediated transfection of Runx2-shRNA mitigates the osteodifferentiation of human valvular interstitial cells. *Pharmaceutics* **2020**, 12, 507 (**Q1**-Pharmacology & Pharmacy; 5 citations).

Considering the enormous variability of both DNA targets and the nature of the transfected cells, I developed an original philosophy based on the Dynamic Constitutional Strategy (DCS) to obtain Dynamic Reversible Frameworks (DCFs) for DNA recognition [7]:

7. L Clima, BF Craciun, G Gavril, **M Pinteala***, Tunable composition of dynamic non-viral vectors over the DNA polyplex formation and nucleic acid transfection. *Polymers* **2019**, 11, 1313 (**Q1**-Polymer Science; 8 citations).

In parallel, I approached the transport and delivery of different drugs by using core-shell magnetic nanoparticles (NPs) [8, patent application A00339/15.06.2021].

8. IA Turin-Moleavin, A Fifere, AL Lungoci, I Rosca, A Coroaba, D Peptanariu, V Nastasa, SA Pasca, AC Bostanaru, M Mares, **M Pinteala***. In vitro and in vivo antioxidant activity of the new magnetic-cerium oxide nanoconjugates, *Nanomaterials* **2019**, 9, 1565 (**Q2**-Nanoscience & Nanotechnology; 9 citations).

Recent results exploited the remarkable stability over time of irradiated gold nanoparticles before functionalization with SH-PEG-NH₂, as compared to non-irradiated ones. A significant cytotoxic effect has been obtained over malignant HOS cells using only 3% doxorubicin, as compared to the effective amount of free drug [9].

9. RV Lupusoru, DA Pricop, CM Uritu, A Arvinte, A Coroaba, I Esanu, MF Zaltariov, M Silion, C Stefanescu, **M Pinteala***. Effect of TAT-DOX-PEG irradiated gold nanoparticles conjugates on human osteosarcoma cells. *Sci Rep* **2020**, 10, 6591 (**Q1**-Multidisciplinary Sciences; 4 citations)

In the last three years, I collaborated with **P1** and **P2** groups in synthesis and characterization of different carbonic anhydrases inhibitors (CAIs) as nano-carriers [10].

10. L Clima, BF Craciun, A Angeli, A Petreni, A Bonardi, A Nocentini, F Carta, P Gratteri, **M Pinteala**, CT Supuran. Synthesis, computational studies and assessment of *in vitro* activity of squalene derivatives as carbonic anhydrase inhibitors. *ChemMedChem* **2020**, 15, 2052-2057 (**Q2**-Pharmacology & Pharmacy; 2 citations).

***first, last and/or corresponding author; the citations are according to Google Scholar**

Research monographs

1. New Trends in Macromolecular and Supramolecular Chemistry for Biological Applications, MJM Abadie, M Pinteala, A Rotaru Eds., Springer, 2021, 371 pages.

2. Mass spectrometry as a complementary approach for noncovalently bound complexes based on cyclodextrins, M Silion, A Fifere, AL Lungoci, NL Marangoci, SA Ibanescu, R Zonda, A Rotaru, **M Pinteala***, in *Advancements of Mass Spectrometry in Biomedical Research*, AG Woods, CC Darie Eds, Springer, 2019, pp. 685-701.

C. Patent requests

1. C Movileanu, D Ficai, A Ficai, M Calin, MF Anghelache, AV Gafencu, G Fundueanu, M Pinteala, M Simionescu, E Andronescu. Intelligent magnetic nanoparticle systems for cell internalization. A00339/15.06.2021. 2. SS Maier, **M Pinteala**, V Maier, A-B Simionescu. Process for controlling the characteristics of synthesized hydroxyapatite particles in the presence of biomacromolecules. 130170/30.08.2019.

D. Lectures as invited speaker in the following events/institutions:

*Keynote speaker - Biomedical applications of polymer-coated metallic nanoparticles, Polymer Connect, July 05-07, 2021, Barcelona, Spain *Nanocarriers-based polycations as polyplexes for gene therapy, 9th World Gene Convention-2018, November 13-15, Singapore 2018. *Non-viral vectors for gene therapy, FFSCI-NanoScience/EMN Croatia Meeting, May 3-7, Dubrovnik, Croatia 2017. *Hydrophobic cyclic siloxane core enhances the transfection efficiency of polyethylenimine based non-viral gene vectors, IUPAC 11th APME, October 18th-22nd, Yokohama, Japan 2015.

E. Organizer of the following international conferences:

*Balkan Fungus, September 13-15, 2018, Timișoara, Romania. *CRISTOFOR I. SIMIONESCU SYMPOSIUM “Frontiers of Macromolecular and Supramolecular Science” Symposia in 2017 and 2018. *12th International Conference on Colloid and Surface Chemistry, May 9-11, 2013, Iasi, Romania.

F. Prizes/awards

*2017 - ACS Chemistry for life - Award for excellence in macromolecular chemistry; *2016-2017 - Senior Fulbright fellowship; *2015-2016 - Diploma of Excellence “Brâncuși-Hubert Curien” Program; *2015 - Honorary diploma of the Romanian Chemical Society.

G. Contribution to the early career of excellent researchers

From 11 former PhD students, most of them have chosen the academia pathway from which 7 are currently working as researchers in our institute, 1 is teaching assistant and 1 is scientific researcher at “Gr. T. Popa” Univ of Medicine and Pharmacy, Iasi, RO, 1 is post-doc at Harm-Anton Klok, EPFL, Switzerland, and 1 is at a private company.

H. Industrial innovation/collaboration

2019-2020 Corthotec Ltd. (British bio-pharma company) - formulating the composition of a class III medical device able to deliver two biologically active compounds in order to sustain bone repair.