

Curriculum Vitae

MARCELA-CORINA ROȘU

PERSONAL INFORMATION



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PROFESSIONAL STATUS CURRENT

Chemist / Senior Research Scientist

Mass Spectroscopy, Chromatography and Applied Physics Department
INCDTIM - National Institute for Research and Development of Isotopic and Molecular Technologies (website: www.itim-cj.ro)

MAIN RESEARCH FIELDS

- PHOTOCATALYSIS ENVIRONMENT** Preparation and characterization of TiO₂-based photocatalysts for degradation of various organic pollutants from water
Development of new TiO₂/graphene-based nanocomposites with applications in textile and leather industries
- BIOMATERIALS** Synthesis and characterization of graphene-based composites for biomedical applications (dental nanocomposites, substrates for cells proliferation and differentiation, electrochemical detection of bioactive compounds)

EDUCATIONAL BACKGROUND

- 2008-2011 **PhD Chemistry**
Babeș-Bolyai University, Faculty of Chemistry and Chemical Engineering, Cluj-Napoca, Romania
- 2007-2008 **MSc Quality analysis and environment monitoring**
Babeș-Bolyai University, Faculty of Environmental Science and Engineering, Cluj-Napoca, Romania
- 2003-2007 **BSc Chemical-Physics**
Babeș-Bolyai University, Faculty of Chemistry and Chemical Engineering, Cluj-Napoca, Romania
- 1990-1993 **Graduate Nursing Programs**
Victor Babeș Special Medical College, Cluj-Napoca, Romania

WORK EXPERIENCE

- 2019 - present **Chemist / Senior Research Scientist**
- 2011 - 2019 **Chemist / Research Scientist**
- 2007 - 2011 **Chemist / Research Assistant**
National Institute for Research and Development of Isotopic and Molecular Technologies (INCDTIM) Cluj-Napoca, Romania
- 1994-2007 **Nurse**
Niculae Stăncioiu Heart Institute, Cluj-Napoca, Romania
- 1988-1990 **Chemist Operator**
The Enterprise of Synthetic Fibers, Cellulose and Paper (new name: SC Someș SA), Dej, Romania

PERSONAL SKILLS

- Mother tongue(s) Romanian
- Other language(s) English

Computer skills

Competent with Microsoft Office programmes (Word, Excel, PowerPoint), Adobe, Origin (data analysis and graphing software), Match! (software for phase identification from X-ray powder diffraction data)

Organisational,
managerial skills

*Responsible of Component Project 4 (ECOTEL): Development of eco-nano-technologies for surface functionalization of textile and leather materials by cold plasma treatment at atmospheric pressure within PN-III-P1-1.2-PCCDI-2017-0743/44***PCCDI/2018-** Interinstitutional program for the development of advanced eco-nanotechnology solutions for multifunctional treatments of leather and textile materials **PHYSforTEL (2018-2021)**

ADDITIONAL INFORMATION

Research Visits

Invited Research Scientist by the University of South-Eastern Norway (USN) – Department of Microsystem (IMS) for research activities in the frame of the RO-NO-0616, contract no. 29/2020 (Norway Grants - Collaborative Research Projects 2019 Call) – “TiO₂ nanotubes/graphene-based nanomaterials to address the emerging contaminants pollution” – GRAFTID (2020-2023): **September – October 2022 (2 months); April – May 2023 (1 month); October – November 2023 (1 month)**

Evaluator of
projects

Remote evaluator - Program **H2020-FETOPEN-2018-2019-2020-01/RIA** (Future and Emerging Technologies / Research and Innovation action) - European Commission (2018 and 2020)

Reviewer

Journal of Material Sciences & Engineering; Toxicology in Vitro; Materials Research Bulletin; Environmental Science and Pollution Research; Materials Science in Semiconductor Processing; Materials; Journal of Solid State Chemistry; Arabian Journal of Chemistry; NANO Brief Reports and Review, Journal of Optoelectronics and Advanced Materials

National Patents
(selection)

- **Composite material based on graphene oxide for dental restorations**, M. Moldovan, S.M. Pruneanu, C.A. Socaci, M.C. Roşu, L.C. Saroşi, S. Cuc, D. Prodan, *OSIM*, Romanian patent no. RO 132533 (2022)
- **Process for the production of a nanocomposite material based on graphene and porphyrin used for the modification of an electrode for the detection of pyrocatechol in aqueous solutions**, M. Coroş, C. Socaci, S. Pruneanu, F. Pogăcean, M.C. Roşu, L. Măgeruşan (INCDTIM Cluj-Napoca assignee), *OSIM*, Romanian patent no. RO 132196 (2021)
- **Preparation method of new nanocomposite material for application in the electrochemical detection of Pb²⁺ ions**, L. Măgeruşan, C. Socaci, M. Coroş, M.C. Roşu, F. Pogăcean, S. Pruneanu (INCDTIM Cluj-Napoca assignee), *OSIM*, Romanian patent no. RO 131442 (2020)
- **The composition of graphene oxide-based adhesive cement for orthodontic brackets bonding**, L.C. Saroşi, S.M. Pruneanu, M.C. Roşu, M. Moldovan, C.A. Prejmorean, D. Prodan, L. Silaghi Dumitrescu (*Babeş-Bolyai* University Cluj-Napoca și INCDTIM Cluj-Napoca assignee), *OSIM* Romanian Patent no. RO 133816 (2020)
- **Composite materials based on TiO₂-Pt/graphene oxide and TiO₂-Pt/reduced graphene oxide for photodegradation of azo-dyes from water**, M.C. Roşu, M. Coroş, C. Socaci, L. Măgeruşan, F. Pogăcean, S. Pruneanu (INCDTIM Cluj-Napoca assignee), *OSIM*, Romanian patent no. RO 131970 (2019)

National Patent
Applications

Skin materials with durable antimicrobial properties and a process for their production, C. Gaidău, M. Stanca, I. Stănculescu, M.C. Roşu, C. Socaci, C.A. Alexe, R.R. Constantinescu, (cesionar INCDTP-Sucursala ICPI Bucureşti și INCDTIM Cluj-Napoca), *OSIM* Patent application A/00572/23.09.2021

Awards

- ♦ **Automated cold plasma treatment line for the quick activation of leathers and fabric surfaces**, C. Tudoran, M.C. Rosu, M. Coros, Diploma of Gold Medal at EUROINVENT 13 Edition, European Exhibition of Creativity and Innovation, 20-22 May 2021, online, Iasi, Romania
- ♦ **Graphene oxide-based composite for dental restorations**, M. Moldovan, S. Pruneanu, C. Socaci, M.C. Rosu, C. Sarosi, S. Cuc, D. Prodan, Excellence Diploma and Gold Medal at International Salon of Research, Innovation and inventions PRO INVENT 2017 XVth edition, 22-24 March 2017, Cluj-Napoca, Romania

Profesional
affiliation
Trainings

Romanian Catalysis Society

- ♦ **1st Autumn School on Physics of Advanced Materials (PAMS-1)**, organized by *Alexandru Ioan Cuza* University, 22-28 September 2014, Iasi, Romania
- ♦ **International training workshop on Principles of Environmental Science and Engineering**, organized by the Michigan State University, Institute of International Health and Forgarty International Center Program on Environmental Health, 8-11 September 2008, Cluj-Napoca, Romania

Scientometric data

According to Scopus database:

Hirsch Index: 18 ISI Papers: 55 ISI Total Citations: 989

According to Web of knowledge database:


Hirsch Index: 17 ISI Papers: 49 ISI total Citations: 875

Participations of international/national conferences: 47, presentations (as *first author*): 105 (36)

Researcher profiles, identifiers

Scopus Author ID: 36550550900

Web of Science ResearcherID: B-5503-2012

 <https://orcid.org/0000-0001-5381-919X>

Brainmap <https://www.brainmap.ro/marcela-corina-roso>

Participation in Projects as Responsible of the project

Component Project 4 (ECOTEL): *Development of eco-nano-technologies for surface functionalization of textile and leather materials by cold plasma treatment at atmospheric pressure within PN-III-P1-1.2-PCCDI-2017-0743/44PCCDI/2018* Interinstitutional program for the development of advanced eco-nanotechnology solutions for multifunctional treatments of leather and textile materials - **PHYSforTEL (2018-2021)**

Participation in Projects as team member

➤ European Programs

✳ **PNRR-III-C9-2022-I8, CF 167/15.11.2022, Contract no. 760098/23.05.2023** - Molecular Carbon Nanostructures: Establishing a Green Synthesis, Studying Properties, and Examining Potential Applications **(2023-2026)**

✳ **ATTRACT** Third Party Project (funded by the European Union's Horizon 2020 Programme) - Carbon quantum dots/graphene hybrids with broad photoresponsivity – **BANDPASS (2019-2020)**

➤ Collaborative Research Projects Romania-Norway

✳ **RO-NO-0616, Contract no. 29/2020** (Norway Grants - Collaborative Research Projects 2019 Call) - TiO₂ nanotubes/graphene-based nanomaterials to address the emerging contaminants pollution – **GRAFTID (2020-2024)**

➤ National Projects

✳ **National Nucleu Program 27N/2023 PN 23 24** - Smart innovation and specialization in the fields of functional materials, energy and bioeconomy – **MAT-EN-BIO**; *component project code PN 23 24 01 01* - Valorization of glycerin and CO₂ by transformation into useful compounds in heterogeneous catalytic processes based on nanostructured carbon composites **(2023-2026)**

✳ **National Nucleu Program 36N/2019 PN 19 35** - Isotopic, Molecular and Alternative Energy Technologies - **IZO-MOL-EA**; *component project code PN 19 35 01 01* - Advanced research and applications for alternative energies and Hi-Tech engineering; *component project code PN 19 35 02 02* - The implementation of new methods, models and innovative technologies in order to promote Romanian food products and protect the environment **(2019-2022)**

✳ **PN-III-P2-2.1-PED-2016-0392** - Laboratory technology for detection of leukemia biomarkers using new graphene-based materials - **BIOLEUK (2017-2018)**

✳ **PN-III-P2-2.1-PED-2016-0415** (103PED/2017) - Electrochemical platform for selective lead ion detection - **RESPOND (2017-2018)**

✳ **PN-III-P2-2.1-PED-2016-1907** (101PED/2017) - New luting materials with graphene used in dentistry - **LUTGRAF (2017-2018)**

✳ **National Nucleu Program PN 16 30/2016** - Isotopic and Molecular Technologies: from Research & Development to Innovation – **IZOMOL**; *component project code PN 16 30 02 01* - Micro-and nanotechnology techniques for development of molecular and thermoelectric devices and graphene-based sensors **(2016-2017)**

✳ **PN-II-RU-TE-2014** - Graphene-porphyrin supramolecular assemblies for chemical and electrochemical detection of hydrogen peroxide-an oxidative stress marker - **SENSGRAFSUPRA (2015-2017)**

✳ **PN-II-PT-PCCA-2013-4-1282 (230/2014)** - New nanocomposites based on biocompatible polymers and graphene for dental applications – **BIOGRAF (2014-2017)**

◆ **National Nucleu Program 44N/2009 PN 09 44** – Isotopic and Molecular Processes; *component project code PN 09 44 02 06 - Determination of the local structure in strongly disordered oxide systems with applications in photocatalysis; component project code PN 09-44 01 19 - New preparation methods of materials for chemical/electrochemical sensors and stable isotopic technology (2009-2015)*

◆ **PN II 92095/2008** - Modern methods of investigation, authentication, conservation and enhancement of the icons in the Ethnographic Museum of Transylvania – **CONSICON (2008-2011)**

◆ **PN II 22-124/2008** - Photocatalytic production of hydrogen from industrial sulphurous waste using solar energy - **H₂SOLAR (2008-2011)**

◆ **PN II 71-122/2007** - Micro and nanostructured oxide materials with luminescent chromatic for lighting devices - **MAMINAL (2007-2010)**

◆ **CEEX - VIASAN 102/2006** - Biocomposites with porphyrins with applicability in the photodynamic therapy of malignant cutaneous tumors - **PORFIDERM (2006-2008)**

◆ **CEEX - MENER 710/2006** - Hydrogen production on photo-electrolytic route - **HIDROSOL (2006-2008)**

Selected articles

◆ D.V. Cosma, M.C. Roşu*, C. Socaci, A.M. Rostas, A. Urda, T. Radu, A. Turza, M. Dan, R. Costescu, K.R. Gustavsen, O. Dobroliubov, K Wang*, **Adsorption-catalysis synergy in the visible-light-driven removal of 17β-estradiol by (Au)TiO₂ nanotubes-graphene composites**, *J. Environ. Chem. Eng.* 12 (2024) 112885, 12 pp.

◆ D.V. Cosma, C. Tudoran, M. Coroş, C. Socaci, A. Urda, A. Turza, M.C. Roşu*, L. Barbu-Tudoran, I. Stanculescu, **Modification of cotton and leather surfaces using cold atmospheric pressure plasma and TiO₂-SiO₂-reduced graphene oxide nanopowders**, *Materials* 16 (2023) 1397, 19 pp.

◆ D. Bala, I. Matei, G. Ionita, D.V. Cosma, M.C. Rosu, M. Stanca, C. Gaidau, M. Baleanu, M. Virgolici, I. Stanculescu, **Luminescence, paramagnetic, and electrochemical properties of copper oxides-decorated TiO₂/graphene oxide nanocomposites**, *Int. J. Mol. Sci.* 23 (2022) 14703, 12 pp.

◆ D. Cosma, A. Urda, T. Radu, M.C. Rosu, M. Mihet, C. Socaci*, **Evaluation of the photocatalytic properties of copper oxides/graphene/TiO₂ nanoparticles composites**, *Molecules* 27 (2022) 5803, 15 pp.

◆ E. Indrea, M.C. Rosu*, R.C. Suci, T.D. Silipas, V. Danciu, **Microstructure of titania aerogels by reverse Monte Carlo simulations**, *J. Phys. Chem. Solids* 168 (2022) 110826, 5 pp.

◆ A. Urda, T. Radu, C. Socaci*, V. Floare-Avram, D. Cosma, M.C. Rosu, M. Coros, S. Pruneanu, F. Pogacean, **Evaluation of N-doped graphene role in the visible-light driven photodegradation of sulfamethoxazole by a TiO₂-silver-graphene composite**, *J. Photochem. Photobiol. A: Chem.* 425 (2022) 113701, 9 pp.

◆ N. Ilie, C. Sarosi, M.C. Rosu, M. Moldovan, **Synthesis and characterization of graphene oxide-zirconia (GO-ZrO₂) and hydroxyapatite-zirconia (HA-ZrO₂) nano-fillers for resin-based composites for load-bearing applications**, *J. Dent.* 105 (2021) 103557, 9 pp.

◆ C. Tudoran, M.C. Roşu, M. Coroş, **A concise overview on plasma treatment for application on textile and leather materials**, *Plasma Processes and Polymers*, 17(8) (2020) 2000046, 15 pp.

◆ M. Coros, C. Socaci, S. Pruneanu, F. Pogacean, M.C. Rosu, A. Turza, L. Magerusan, **Thermally reduced graphene oxide as green and easily available adsorbent for Sunset yellow decontamination**, *Environ. Res.* 182 (2020) 109047, 9 pp.

◆ A.J.M. Al-Ogaidi, R.I. Stefan-van Staden, L.A. Gugoasa, M.C. Rosu, C. Socaci, **Electrochemical determination of the KRAS genetic marker for colon cancer with modified graphite and graphene paste electrodes**, *Anal. Lett.* 51(17) (2018) 2820-2832

◆ R.I. Stefan-van Staden, L.R. Balahura, L.A. Gugoasa, J.F. van Staden, H.Y. Aboul-Enein, M.C. Rosu, S. Pruneanu, **Pattern recognition of 8-hydroxy-2'-deoxyguanosine in biological fluids**, *Anal. Bioanal. Chem.*, 410 (2018) 115–121

◆ M. Moldovan, D. Prodan, C. Sarosi, R. Carpa, C. Socaci, M.C. Rosu*, S. Pruneanu, **Synthesis, morpho-structural properties and antibacterial effect of silicate-based composites containing graphene**

oxide/hydroxyapatite, *Mater. Chem. Phys.* 217 (2018) 48–53

◆ M.C. Rosu, C. Socaci, M. Coros, F. Pogacean, L. Magerusan, A. Turza, S. Pruneanu, **Azo dyes degradation using TiO₂-Pt/graphene oxide and TiO₂-Pt/reduced graphene oxide photocatalysts under UV and natural sunlight irradiation**, *Solid State Sci.* 70 (2017) 13-20

◆ R.I. Stefan-van Staden, A.G. Diaconeasa, L.A. Gugoasa, M.C. Rosu, S. Pruneanu, **Molecular recognition of pyruvic acid and folic acid in whole blood**, *RSC Adv.*, 7 (2017) 50072-50078

◆ L.A. Gugoasa, R.I. Stefan-van Staden, A.J.M. ÁIOgaidi, C. Stanciu-Gavan, J.F. van Staden, M.C. Rosu, S. Pruneanu, **Molecular recognition of colon cancer biomarkers: P53, KRAS and CEA in whole blood samples**, *J. Electrochem. Soc.*, 164(9) (2017) B443-B447

◆ M.C. Rosu, C. Socaci, V. Floare-Avram, G. Borodi, F. Pogacean, M. Coros, L. Magerusan, **Photocatalytic performance of graphene/TiO₂-Ag composites on amaranth dye degradation**, S. Pruneanu, *Mater. Chem. Phys.* 179 (2016) 232-241

◆ M.C. Rosu, I. Bratu, **Promising psyllium-based composite containing TiO₂ nanoparticles as aspirin-carrier matrix**, *Prog. Nat. Sci.: Mater. Int.* 24(3) (2014) 205-209

◆ M.C. Rosu, R.C. Suciu, M. Mihet, I. Bratu, **Physical-chemical characterization of titanium dioxide layers sensitized with the natural dyes carmine and morin**, *Mater. Sci. Semicond. Process.* 16(6) (2013) 1551-1557

◆ M.C. Rosu, R.C. Suciu, M.D. Lazar, I. Bratu, **The influence of alizarin and fluorescein on the photoactivity of Ni, Pt and Ru-doped TiO₂ layers**, *Mater. Sci. Eng. B* 178(7) (2013) 383-390