



Ana-Maria Gurban

Nationality: Romanian **Date of birth:** 27/10/1974

Place of birth: Bucharest, Romania **Gender:** Female

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BrainMAP: [U-1700-035R-4951](#)

Website: <https://icechim.ro/en/rd-groups/g6-biotechnology-bioanalysis/>

Work: Splaiul Independenței 202 ICECHIM, P26, 060021 București (Romania)

ABOUT ME

Senior researcher in analytical chemistry with extensive experience in the development of electrochemical and optical biosensors, nanomaterials, and bioanalytical methods. Actively involved in European and national research projects, with a strong focus on sensor-based technologies for food quality, environmental monitoring, and health-related applications. Experienced in interdisciplinary collaboration, technology transfer, and scientific dissemination. Motivated by continuous professional development, with personal interests in scientific communication, applied research, and outdoor activities.

EDUCATION AND TRAINING

Doctor in Chemistry of University of Bucharest, Romania

Faculty of Chemistry, University of Bucharest, Romania [01/10/2001 – 17/11/2006]

City: Bucharest | **Country:** Romania | **Field(s) of study:** Natural sciences, mathematics and statistics:

• Biochemistry • Chemistry • Environmental sciences | **Level in EQF:** EQF level 8 | **Thesis:** Biosensors based on dehydrogenases for food and environment monitoring

Development of electrochemical biosensors, analytical chemistry, enzyme based biosensors

Title of Doctor in chemistry obtained by Order of Ministry of Education and Research from Romania, No 1225/31.05.2007

Doctor in Chemistry of University of Perpignan via Domitia, France

Energy and Environment doctoral school, University of Perpignan via Domitia, France [01/10/2001 – 17/11/2006]

City: Perpignan | **Country:** France | **Website:** <http://www.theses.fr/2006PERP0922> | **Field(s) of study:** Natural sciences, mathematics and statistics: • Biochemistry • Chemistry • Environmental sciences • Biology | **Final grade:** Tres Honorable | **Level in EQF:** EQF level 8 | **Thesis:** Biosensors based on dehydrogenases for food and environment monitoring

Analytical chemistry, biochemistry, electrochemistry, development of electrochemical enzyme based (bio)sensors, process control

Order of title PERPIG 6187005/11.12.2006

Master in Biosensors for environment monitoring

Faculty of Chemistry, University of Bucharest, Romania [01/10/1998 – 30/06/2000]

City: Bucharest | Country: Romania | Level in EQF: EQF level 7

- Analytical chemistry, electrochemistry, spectrometry, (bio)sensors/

Title of Disertation Thesis : Development of amperometric biosensors for detection of dithiocarbamate fungicides

Bachelor in Chemistry

Faculty of Chemistry, University of Bucharest, Romania [03/10/1994 – 01/07/1998]

City: Bucharest | Country: Romania | Level in EQF: EQF level 6

Chemistry, instrumental analysis, analytical chemistry

Licence Thesis Title: *Analytical methods used for detection of urea in biological samples, such as human serum and urine*

Training course-Automation Research Center PRECIS

Polytechnic University of Bucharest, Romania [21/05/2018 – 22/05/2018]

City: Bucharest | Country: Romania

Large database for researchers – Advanced computing techniques for scientific research

Training stage- Aptasensors for mycotoxines detection

BAE Laboratory, University of Perpignan via Domitia, France [01/11/2015 – 20/12/2015]

City: Perpignan | Country: France

Electrochemistry, aptasensors, immunosensors/ Development of fluorescence quenching based aptasensors for mycotoxins detection

NATO Training Course

North Atlantic Treaty Organization [09/09/2007 – 13/09/2007]

City: Vichy | Country: France

Sensors for Environment, Health and Security: Advanced Materials and Technologies

Internal auditors – training course

Qualitas, Bucharest, Romania [11/07/2004 – 13/07/2004]

City: Bucharest | Country: Romania

Management, internal and external audit, quality control

Training course – Process control

Montalcino, Italy [11/03/2004 – 14/03/2004]

City: Montalcino | Country: Italy

Control of process parameters, control of different parameters in fermentation process/ Additional Forms of Control

Workshop – wine fermentation monitoring

Ruhr University, Bochum, Germany [05/10/2003 – 11/10/2003]

City: Ruhr | Country: Germany

Development of biosensors for fermentation metabolites detection

Training course - Novel Technology for Controlling Wine Production

Tokay Vinary, Hungary [23/03/2003 – 25/03/2003]

City: Tokay | Country: Hungary

WORK EXPERIENCE

 **National Institute for Research & Development in Chemistry and Petrochemistry-ICECHIM** – Bucharest, Romania

Address: Splaiul Independentei No 202, Bucharest ICECHIM, P26, 060021 Bucharest (Romania) | Website: <https://www.icechim.ro> | Email address: ana-maria.gurban@icechim.ro | Name of unit or department: Biotechnology&Bioanalysis Department - **Business or sector:** Professional, scientific and technical activities

Senior scientist 1st degree and Leader of Biotechnology&Bioanalysis Department

[23/05/2023 – Current]

Department management

Development and implementation of the department development strategies

Leadership / management of institutional research and development projects

Scientific coordination of R&D activities.

Member in the Scientific Board Council of ICECHIM

Design, development, characterization and optimization of: electrochemical platforms for nitrite monitoring in soil; opto-electrosensing platforms for biogenic amines detection in food; innovative nanomaterial based wearable multiplex patch for health and care diagnosis.

 **National Institute for Research & Development in Chemistry and Petrochemistry-ICECHIM** – Bucharest, Romania

Address: Splaiul Independenței 202, Bucharest ICECHIM, P26, 060021 Bucharest (Romania) | Website: <https://www.icechim.ro> | Email address: ana-maria.gurban@icechim.ro | Name of unit or department: Biotechnology&Bioanalysis Department - **Business or sector:** Professional, scientific and technical activities

Senior scientist 2nd degree, Vice-Leader of Biotechnology&Bioanalysis Department

[16/09/2019 – 22/05/2023]

Coordination of Research and Development activities at the level of national and European projects

Participation in research teams, national and international projects in the field of bioanalysis, biochemistry, bioeconomy

Design, development, characterization and optimization of: (1) miniaturized sensitive bioanalytical tools for food and environmental monitoring; (2) dual sensitive immunoassay platforms (electrochemical-optical) for toxins detection;

Member in the Scientific Board Council of ICECHIM

 **National Institute for Research & Development in Chemistry and Petrochemistry-ICECHIM** – Bucharest, Romania

Email address: ana-maria.gurban@icechim.ro | Name of unit or department: Biotechnology&Bioanalysis Department - **Business or sector:** Professional, scientific and technical activities

Senior scientist 3rd degree

[01/07/2017 – 15/09/2019]

Participation in R&D activities in the field of analytical biochemistry, in-flow immunoassay systems.

Development of immunosensors for mycotoxins detection.

Coordination of an institutional project PN.19.23.03.02.01 - Innovative sensors and biosensors for the determination of toxic compounds such as biogenic amines and endocrine disruptors in food and the environment (XEN-BIAS-SES).

 **University of Bucharest, Laboratory for product quality control - LABORQ** – Bucharest, Romania

Address: 36-46 Mihail Kogalniceanu, Bucharest Analytical Chemistry Department, 050107 Bucharest (Romania) | Website: <https://chimie.unibuc.ro/laborator-pentru-controlul-calitatii-produselor-laborq> | Name of unit or department: Analytical Chemistry Department - **Business or sector:** Education

Senior scientist 3rd degree, post-doc

[07/03/2007 – 30/06/2017]

Fundamental research in design, development, characterization and optimization of electrochemical aptasensors and of surface acoustic wave (SAW) immunosensors using LiTaO₃ or SiO₂ supports, for the detection of high

molecular weight targets (mycotoxins) in liquid samples. Development of (bio)sensors based on nanocomposite materials for sensitive detection of tumor biomarkers and xenoestrogenic compounds.

 **Metallurgical Research Institute – ICEM SA – Bucharest, Romania**

Website: <http://www.icem.ro> | Name of unit or department: Refractory Department - Business or sector: Professional, scientific and technical activities

Junior scientist

[01/12/1998 – 06/03/2007]

Fundamental research in development of ceramic composite materials, such as $\text{Al}_2\text{O}_3\text{-TiO}_2$ and $\text{Al}_2\text{O}_3\text{-TiO}_2\text{-ZrO}_2$, with special thermal and mechanical resistance, and potential applications in obtaining ballistic plates. Fundamental and applied research in development, casting, plastic deformation and heat treatment of steel and nonferrous alloys, studies and material characterisation expertise and obtaining unique products.

SKILLS

Job related skills

clinical biochemistry / sensors / analytical chemistry / μStat ECL / Dropview / electrochemistry / instrumentation equipment / chemistry / User Interface Experience using software of NanoDrop / NanoDrop / NanoDropView Softs

Communication Skills

Organizational and planning skills / communication, collaboration and creativity / Good listener and communicator / Initiative, analytical, communication and interpersonal / coordinate communication within a team / use different communication channels / adapt to change / Team-work oriented / communicate with stakeholders / Motivated

Organizational/Management Skills

Flexibility adaptability and managing multiple priorities / Decision-making / Responsibility / managerial / collaboration within multidisciplinary research teams / efficient time management / Critical thinking / Strong organizational and project coordination skills / meeting deadlines / supporting reporting activities within European and national research projects / Experience in supporting project implementation / Experience in mentoring junior researchers and students / fostering professional development / supporting skill acquisition / promoting collaborative and responsible research practices

Digital competences

digital communication tools / online collaborative platforms / Digital tools for scientific research / Use of specialized software for analytical instrumentation / data acquisition, visualization and interpretation / electrochemical measurements / Confident user of office and scientific productivity software (word processing, presentations)

LANGUAGE SKILLS

Mother tongue(s): Romanian

Other language(s):

English

LISTENING C1 **READING** C1 **WRITING** C1

SPOKEN PRODUCTION C1 **SPOKEN INTERACTION** C1

French

LISTENING C1 **READING** C1 **WRITING** B1

SPOKEN PRODUCTION B2 **SPOKEN INTERACTION** B2

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

PUBLICATIONS

[2025]

Innovative Approaches and Evolving Strategies in Heavy Metal Bioremediation: Current Limitations and Future Opportunities

Authors: Firincă C., Zamfir L.-G., Constantin M., Răut I., Jecu M-L., Doni M., Gurban A.-M.*, Şesan T. E. | **Journal Name:** Journal of Xenobiotics | **Volume, Issue and Pages:** 15(3), 63

Firincă C., Zamfir L.-G., Constantin M., Răut I., Jecu M-L., Doni M., Gurban A.-M.*, Şesan T. E., Journal of Xenobiotics, 2025

[2025]

Assessment of Biogenic Amines Produced by Microorganisms as Food Spoilage Indicators by Sensitive Detection Using Portable Opto-Electrochemical Tools based on Biosensors

Authors: Zamfir L-G, Răut I., Constantin M., Corneli N.O., Firincă C., Jecu ML, Epure P, Nistor CL, Doni M, Gurban AM | **Journal Name:** Food Control | **Volume, Issue and Pages:** 172, 111161

[2024]

Extracellular Biosynthesis, Characterization and Antimicrobial Activity of Silver Nanoparticles Synthesized by Filamentous Fungi

Authors: Raut I., Constantin M., Şuică-Bunghez R., Firinca C., Alexandrescu E., Gifu I.C., Doni M., Zamfir L.G., Gurban A.M.*, Jecu L. | **Journal Name:** Journal of Fungi | **Volume, Issue and Pages:** 10 (11), 798

[2024]

Microbial Removal of Heavy Metals from Contaminated Environments Using Metal-Resistant Indigenous Strains

Authors: Firinca C, Zamfir L-G, Constantin M., Raut I, Capra L, Popa D, Jinga M-L, Baroi A. M., Fierascu R. C. , Corneli N.O., Postolache C., Doni M , Gurban A.-M.*, Jecu L*, Sesan T.E | **Journal Name:** Journal of Xenobiotics | **Volume, Issue and Pages:** 14, 51–78

[2023]

Ganoderma lucidum-mediated green synthesis of silver nanoparticles with antimicrobial activity

Authors: Constantin M., Răut I., Suica-Bunghez R., Firinca C., Radu N., Gurban A.-M.*, Preda S., Alexandrescu E., Doni M., Jecu L. | **Journal Name:** Materials | **Volume, Issue and Pages:** 16(12), 4261

[2023]

Flexible Miniaturized Electrochemical Sensors Based on Multiwalled Carbon Nanotube-Chitosan Nanomaterial for Determination of Nitrite in Soil Solutions

Authors: Ana-Maria Gurban*, Lucian-Gabriel Zamfir, Petru Epure, Ioana-Raluca Şuică-Bunghez, Raluca Mădălina Senin, Maria-Luiza Jecu, Maria-Lorena Jinga, Mihaela Doni | **Journal Name:** Chemosensors | **Volume, Issue and Pages:** 11(4), 224

[2022]

Highlighting bacteria with calcifying abilities suitable to improve mortar properties

Authors: I. Răut, M. Constantin, I. Petre, M. Raduly, N. Radu, A.-M. Gurban*, M. Doni, E. Alexandrescu, C.-A. Nicolae, L. Jecu | **Journal Name:** Materials | **Volume, Issue and Pages:** 15 (20), 7259

[2022]

Exploring the Potential Applications of Paecilomyces lilacinus 112

Authors: M. Constantin, I. Raut, A.-M. Gurban* , M. Doni, N. Radu, E. Alexandrescu, L. Jecu* | **Journal Name:** Appl. Sci. | **Volume, Issue and Pages:** 12, 7572

[2022]

Eco-friendly biodegradation of skins and hides by keratinolytic fungus Cladosporium sp. 9th International Conference on Advanced Materials and Systems, ICAMS 2022Bucharest26 October 2022,through 28 October 2022Code 292469 (proceeding)

Authors: Constantin M., Constantinescu R, Ganciarov M., Suica-Bunghes R., Gurban A-M, Firinca C., Vasilescu, G., Jecu L., Raut I., Ignat M. | **Journal Name:** ICAMS Proceedings of the International Conference on Advanced Materials and Systems | **Volume, Issue and Pages:** Open Access Pages 115, 120

[2021]

Versatility of Reverse Micelles: From Biomimetic Models to Nano (Bio)Sensor Design

Authors: M.-L. Arsene, I. Răut, M. Călin, M.-L. Jecu, M. Doni*, A.-M. Gurban* | **Journal Name:** Processes | **Volume, Issue and Pages:** 9(2), 345

[2021]

Fungal Based Biopolymer Composites for Construction Materials

Authors: I. Raut, M. Calin, Z. Vuluga, F. Oancea, J. Paceagiu, N. Radu, M. Doni, E. Alexandrescu, V. Purcar, A.-M. Gurban, I. Petre, J. Luiza | **Journal Name:** Materials | **Volume, Issue and Pages:** 14(11), 2906

[2021]

Cladosporium sp. Isolate as Fungal Plant Growth Promoting Agent

Authors: I. Răut, M. Călin, L. Capră, A.-M. Gurban*, M. Doni, N. Radu and L. Jecu | **Journal Name:** Agronomy | **Volume, Issue and Pages:** 11(2), 392

[2021]

IoT data acquisition system for soil evaluation

Authors: Epure P., Cotfas D.T., Gurban A.-M., Oproiu M. P., Cotfas P. A. | **Journal Name:** International Aegean Conference on Electrical Machines and Power Electronics, ACEMP 2021 | **Volume, Issue and Pages:** Pages 499 – 504

[2020]

Study Regarding the Potential Use of a Spent Microbial Biomass in Fertilizer Manufacturing

Authors: N. Radu, A. A. Chirvase, N. Babeanu, O. Popa, P. Cornea, L. Pirvu, M. Bostan, A. Ciric, E. Mathe, E. Radu, M. Doni, M. Constantin, I. Raut, A.-M. Gurban, M. Begea | **Journal Name:** Agronomy | **Volume, Issue and Pages:** 10(2), 299

[2019]

Applications of Fungal Strains with Keratin-Degrading and Plant Growth Promoting Characteristics

Authors: M Calin; I Raut; ML Arsene; L Capra; AM Gurban; M Doni; L Jecu | **Journal Name:** Agronomy | **Volume, Issue and Pages:** 9(9), 543

[2019]

Comparative Study on the Behavior of Virgin and Recycled Polyolefins–Cellulose Composites in Natural Environmental Conditions

Authors: I Raut, M Calin, Z Vuluga, E Alexandrescu, ML Arsene, V Purcar, CA Nicolae, AM Gurban, M Doni, L Jecu | **Journal Name:** Journal of Composites Sciences | **Volume, Issue and Pages:** 3, 60

[2017]

Achievements and prospects in electrochemical-based biosensing platforms for Aflatoxin M1 detection in milk and dairy products

Authors: Gurban A.-M., Petru Epure, Florin Oancea, Mihaela Badea Doni | **Journal Name:** Sensors | **Volume, Issue and Pages:** 17, 2951, 1-21 | **Publisher:** <https://doi.org/10.3390/s17122951>

[2016]

Tetramethyl-6-carboxyrhodamine quenching-based aptasensing platform for aflatoxin B1: Analytical performance comparison of two aptamers

Authors: K. Y. Goud, A. Sharma, A. Hayat, G. Catanante, K. V. Gobi, Gurban A.-M., J. - L. Marty | **Journal Name:** Analytical Biochemistry | **Volume, Issue and Pages:** 508, 19-24

[2015]

Selective chemical sensor for liquid specimens based on lithium tantalate surface acoustic wave devices

Authors: Baracu A., Gurban A.-M., Giangu I., Craciunoiu F., Buiculescu V., Dinescu A., Müller R., Rotariu L., Bala C., Mitrea C | **Journal Name:** Semiconductor Conference (CAS), IEE Publisher | **Volume, Issue and Pages:** 271-274 | **Publisher:** Print ISSN: 1545-827X

[2015]

Enhanced sensitive love wave surface acoustic wave sensor designed for immunoassay formats

Authors: Puiu M., Gurban A.-M., Rotariu L., Brajnicov S., Viespe C., Bala C | **Journal Name:** Sensors | **Volume, Issue and Pages:** 15, 10511-10525

[2015]

Manganese oxide based screen-printed sensors for xenoestrogens detection

Authors: Gurban A.-M., Burtan D., Rotariu L., Bala C. | **Journal Name:** Sensors and Actuators B | **Volume, Issue and Pages:** 210, 273-280

[2012]

Determination of xenoestrogenic compounds using nanostructured biosensing device

Authors: Gurban A.-M., Rotariu L., Marinescu V. E., Bala C. | **Journal Name:** Electroanalysis | **Volume, Issue and Pages:** 24 (12), 2371-2379

[2011]

Sensitive detection of endocrine disrupters using ionic liquid – Single walled carbon nanotubes modified screen-printed based biosensors

Authors: Gurban A.-M., Rotariu L., Baibarac M., Baltog I., Bala C. | **Journal Name:** Talanta | **Volume, Issue and Pages:** 85 (4), 2007-2013

[2009]

Synergistic effect of mediator-carbon nanotube composites for dehydrogenases and peroxidases-based biosensors

Authors: Arvinte A., Rotariu L., Bala C., Gurban A.-M. | **Journal Name:** Bioelectrochemistry | **Volume, Issue and Pages:** 76 (1-2), 107-114

[2008]

Improvement of NADH detection using Prussian blue modified screen-printed electrodes and different strategies of immobilization-

Authors: Gurban A.-M., Noguer T., Bala C., Rotariu L. | **Journal Name:** Sensors and Actuators B | **Volume, Issue and Pages:** 128 (2), 536-544

[25/11/2025 – Current]

In-situ bioremediation process of soils polluted with hexavalent chrome, using a consortium based on *Trichoderma* and *Clonostachys*

Registration No. **A/00554 - 25.11.2025**

Authors: Cristina Firincă, Lucian-Gabriel Zamfir, Ana-Maria Gurban, Mihaela Doni, Mariana Constantin, Iuliana Răut, Roxana-Ioana Matei, Maria-Luiza Jecu

[12/11/2024 – Current]

Procedure for realization of a multisensitive platform based on innovative nanomaterials for monitoring of clinically relevant biomarkers

Registration No. **A/00687-12.11.2024**

Authors: Ana-Maria Gurban, Lucian-Gabriel Zamfir, Mihaela Doni, Mariana Constantin, Iuliana Răut, Cristina Firincă

[10/08/2023 – Current]

Procedure for realization of electrochemical biosensors based on nanomaterials for biogenic amines determination

Registration No. A00443/10.08.2023

Authors: Zamfir L., Gurban A-M., Doni M., Raut I., Constantin M., Jecu L

[05/05/2023 – Current]

Biomaterials based on silver nanoparticles and *Ganoderma lucidum* metabolites and procedure for their obtainment

Registration No. A00123/2023

Authors: Constantin M., Raut I., Bunghez Suica R., Gurban A.-M., Firinca C., Zamfir L-G., Vasilescu G., Radu N., Jecu M.-L

[17/11/2022 – Current]

Procedure for realization of miniaturized electrochemical sensor for nitrite determination in soil

Registration No. A00743/2022

Authors: Gurban A.-M., Doni M., Zamfir L-G, Jecu M. L., Raut I., Constantin M.

[02/12/2018 – Current]

Procedure for realization of an immunoassay platform based on electrochemical detection combined with surface plasmon resonance for a selective determination method of mycotoxins

Registration No. A01031/2018

Authors: Doni M., Gurban A.-M., Epure P.

[15/06/2021 – Current]

Composition of culture medium for sporulation

A/00663/2021

Authors: Radu N., Constantin M., Raut I., Vasilescu G., Gurban A.M., Doni M., Jecu L.

BOOK CHAPTERS

Conjugated Polymers in Enzyme-based Electrochemical Biosensors

Sevinc Kurbanoglu, Şevki Can Cevher, Ana-Maria Gurban, Mihaela Doni, Saniye Soylemez- Chapter 1 in Advance in Material Science Research, Vol 58, 1-48, Nova Science Publishers, Inc., 2023, editor Maryann C. Wythers, ISBN: 979-8-88697-488-1

Paintings characteristics from inside of wooden churches achieved in the period 1750-1850

Radu N., Babeanu N., Cornea P., Calin M., Jecu L., Raut I., Gurban A.-M., Doni M., In *Archaeometrical study of selected objectives from Golesti Museum of Viticulture and Pomiculture*, published in Ruse Press, Bulgaria, 2020, 153-188, ISBN: 978-619-91466-1-3.

Microbial contamination of wooden cultural heritage artifacts of selected objectives from Golesti Museum

Calin M., Raut I., Gurban A.-M., Doni M., Radu N., Jecu L., In *Archaeometrical study of selected objectives from Golesti Museum of Viticulture and Pomiculture*, published in Ruse Press, Bulgaria, 2020, 189-233, ISBN: 978-619-91466-1-3.

Microbial deterioration of textile and wood artifacts

Raut I., Calin M., Arsene M., Doni M., Gurban A.-M., Jecu L., In: *Valorization of cultural heritage through archaeometry studies using nuclear techniques and other scientific methods. General considerations and short literature survey*, published in .pdf Acrobat Reader format, CD-ROM, Bucharest, 2018, editors Fierascu R.C., Fierascu I., Doni M., ISBN: 978-973-0-27114-0

Isolation and identification of microorganisms involved in the biodeterioration of cultural heritage artifacts

Calin M., Raut I., Arsene M., Doni M., Gurban A.-M., Jecu L., In: *Practical exemples regarding the valorization of cultural heritage through archaeometry studies using nuclear techniques and other scientific methods*. Editors Fierascu R.C., Fierascu I., Doni M., ISBN: 978-973-0-27114-0, Ed. Printech, ISBN 978-60-23-0888-9, Bucharest, 2018

Development of biological sensors based on screen-printed electrodes for environmental pollution monitoring

Gurban A.-M., Noguer T., Rotariu L., Sandulescu Tudorache M., Bala C., *Sensors for Environment, Health and Security. Advanced Materials and Technologies*, Springer, Series C: Environmental Security, Netherlands, 2008, 401-414, ISBN 978-1-4020-9010-3.

NETWORKS AND MEMBERSHIPS

[04/04/2018 – Current] Bucharest, Romania

Member of Scientific Council of INCDCP-ICECHIM Member of the Scientific Council, contributing to strategic scientific planning, evaluation of research activities, and support of institutional research priorities.

[2000 – Current] Bucharest, Romania

Member of Romanian Society of Chemistry Active member of the Romanian Society of Chemistry, contributing to the professional scientific community and staying engaged with developments in the field of chemistry, supporting scientific exchange and professional development in the field of chemistry.

CAREER BREAK

[2008 – 2010]

Maternity leave

[2016 – 2017]

Maternity leave

PROJECTS

[05/05/2025 – 04/05/2027]

Enhancing food safety through drug residues monitoring in food chain using innovative biosensitive portable tools - PN-IV-P7-7.1-PED-2024-1277 – SafeBioChain Budget: 746.162 Lei/ 149.300 Euro Project Director: dr. chim. Ana-Maria Gurban

The main goal of the project is to develop miniaturized, cost-effective and robust biosensing instruments based on an innovative MXene-based nanomaterial customized with specific bioreceptors – an emerging class of 2D-conductive materials with superior electrochemical, optical and mechanical properties, intended for the specific and sensitive detection of drug residues in food. The originality and complexity of the **SafeBioChain** project lies in the development of versatile and flexible aptasensors for the identification of sulfadimethoxine, ciprofloxacin and ractopamine residues in food resources. Through this approach, the project will allow the development of the first integrated opto-electrosensitive platform for portable bioanalytical instruments, offering an innovative solution for the safe and efficient monitoring of food quality.

[28/06/2022 – 31/12/2024]

Innovative fulleranol - hydrogels based nanomaterials for health diagnostic and care applications, PNIII-mEraNet-COFUND 318/2022-2024 – FULSENS-GEL Budget: 1.237.000 lei / 250.000 Euro Project Director: dr. chim. Ana-Maria Gurban

The main objective of the project consists in the development of an innovative nanomaterial, based on combination of the elastic, flexible and resistant hydrogels with functional nanomaterials based on fullerenols (FL), thus resulting a new 3D conductive hydrogel with tunable network structures, active surface and improved electrochemical, mechanical and optical properties for sensing applications. By entrapment of biomolecules in such conductive hydrogels can be achieved unique features and diverse functionalities for various promising fields of applications: wearable, flexible and point-of-care sensors for clinical diagnostic, food quality control, environmental monitoring, flexible energy storage device, human-machine interfaces and intelligent sensors, based on self-healing and self-adhesive nanomaterial.

[23/06/2022 – 23/06/2024]

Biogenic amines detection in food based on an innovative opto-electrosensitive platform, PN-III-P2-2.1-PED-2021-1942/2022-2024 – AMI-FOOD Budget: 598.795 lei/ 121.215 Euro Project Director: dr. chim. Ana-Maria Gurban

The main goal of the project consists in the development of cost-effective and robust miniaturized opto-electrosensitive platforms based on an innovative nanomaterial, with enhanced electrochemical, optical and mechanical properties, for specific and sensitive determination of biogenic amines (BAs) in food. Tailored functionalization of FL with active functional groups provides a favorable microenvironment for immobilization of bioreceptors. The innovation of the AMI-FOOD project results from the combination of tailored functionalized FL nanomaterial with a highly sensitive opto-electrochemical detection method, electrochemiluminescence (self-ECL).

[10/12/2020 – 31/12/2022]

Manufacturing of a portable system for nitrite monitoring in soil based on an innovative sensor, PNIII-mEraNet-MANUNET 216/2020-2022 – NITRISSENS Budget: 1.217.500 Lei/ 250.000 Euro Project responsible: dr. chim. Ana-Maria Gurban

The project addresses to the need of portable and cost-effective systems for onfield monitoring of pollution induced by the nitrification process occurred in soil. The nitrification consists in biological oxidation of the relatively immobile ammonium (NH_4^+) to highly mobile nitrate, via nitrite. In agricultural systems which are based on chemical fertilizers, rapid and unregulated nitrification results in an inefficient N use by crops,

increasing in this way the nitrogen (N) leakage and environmental pollution. The nitrite contamination of ground and surface waters represents the major concern associated with the nitrification process.

[02/08/2010 – 02/08/2012]

Bio-analytical system based on carbon nanomaterials functionalization with ionic liquids for selective detection of tumor biomarkers, PNII-PD nr. 164/02.08.2010 Budget: 340.000 lei/Project coordinator: dr chim. Ana-Maria Gurban

[2020 – 2022]

Biotechnological strategies for innovative construction materials that incorporate bacterial bioproduct, PN-III-P2-2.1-PED-0991/2020-2022 - BIO-CONSTR-MATER Key person

CONFERENCES AND SEMINARS

[15/10/2025 – 17/10/2025] Cluj-Napoca, Romania,

22nd edition of the International Exhibition of Scientific Research, Innovation, and Invention – PRO INVENT *Innovative MXene-peptides for electrochemical miniaturized platforms dedicated to tumor biomarker detection*, Zamfir L.-G., Gîfu C., Răut I., Constantin M., Firincă C., Jecu L., Doni M., Gurban A.-M.

[15/10/2025 – 17/10/2025] Cluj-Napoca, Romania

22nd edition of the International Exhibition of Scientific Research, Innovation, and Invention – PRO INVENT 2025 *Enhancing food safety through drug residues monitoring in food chain using innovative biosensitive portable tools – SafeBioChain*, Gurban A.-M., Zamfir L.-G., Doni M., Firincă C., Răut I., Constantin M., Jecu L.

[15/10/2025 – 17/10/2025] Bucharest, Romania

21st edition of the International Symposium PRIORITIES OF CHEMISTRY FOR A SUSTAINABLE DEVELOPMENT PRIOCHEM *Biosensing platforms with advanced nanocomposites for non-invasive monitoring of biomarkers in biological fluids*, Zamfir L.-G., Gîfu C., Soylemez S., Soyler D., Epure P., Răut I., Constantin M., Firincă C., Jecu L., Doni M., Gurban A.-M.

[15/10/2025 – 17/10/2025] Bucharest, Romania

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