Cerere de premiere

1. Candidat
Nume: FOCȘAN
Nume anterior: IOSIN
Prenume: Monica Olivia
Doctor din anul: 2010 (dovada atașată la pag. 47-48)
Poziție ocupată: Conferențiar dr. abilitat, Facultatea de Fizică, Universitatea Babeș-Bolyai, Cluj-Napoca și Cercetător Științific grad I (CS I), Institutul de Cercetări Experimentale în BioNanoȘtiințe, Universitatea Babeș-Bolyai, Cluj-Napoca
Telefon mobil:
Adresa de e-mail:

2. Ediția „Gala Cercetării Românești": 2024
3. Premiul: Șerban Țițeica, domeniul Fizică, Categoria – individual

Prezenta cerere conține următoarele informații

- ✓ **Cererea de premiere** ce contine:
  - i) Descriere a celor mai importante realizări științifice din ultimii 5 ani (pag. 3-5)
  - ii) Curriculum Vitae narativ (pag. 5-8)
  - iii) Lista publicațiilor cu evidențierea publicațiilor relevante din ultimii 5 ani (pag. 9-16)
  - iv) Lista proiectelor de cercetare câștigate si valoarea acestora (pag. 16-17)
  - v) Lista brevetelor depuse și a celor acceptate. (pag. 17)
- ✓ **Fișa cu criteriile de eligibilitate**: conține articolele publicate în ultimii 5 ani, aflate în Q1/Q2 în calitate de autor correspondent (pag. 18 -20)
- ✓ **Fișa de selectare**: conține indicatorii cantitativi de activitate cu menționarea rezultatelor activității de cercetare din ultimii 5 ani, în conformitate cu anexa nr. 2 din regulament (pag. 21-35)
- ✓ **Realizările științifice și academice ale candidatei din toată cariera** în vederea evaluării calitative (pag. 36-46)
- ✓ **Copie a diplomei de doctor** (paginile 47-48)
- ✓ **Declarație consimțământ privind prelucrarea datelor** cu caracter personal conform anexei nr. 5 din regulament (pagina 49)

Data

9.02.2024

Conf dr. habil. Monica Olivia FOCȘAN

Award Application

~ for Romanian Research Gala - 2024 ~

1. Candidate

Name: FOCȘAN

Born: IOSIN

First Name: Monica Olivia

PhD: since 2010 (see PhD degree at page 47-48)

Habilitation: since **2019**

Current position: Associate professor habil., Faculty of Physics, Babes-Bolyai University and Senior Scientific Researcher grade I (CS I) at the Nanobiophotonics and Laser Microspectroscopy Center (NLMC), Interdisciplinary Research Institute in Bio-Nano-Sciences (ICI-BNS)

Institution: Babes-Bolyai University, Cluj-Napoca, Romania

Mobile Phone:

E-mail address:

2. "Romanian Research Gala" edition: 2024

3. Prize: "Șerban Țițeica", Physics Field, Category – individual

4. Team leader: NA

5. Research team structure: NA

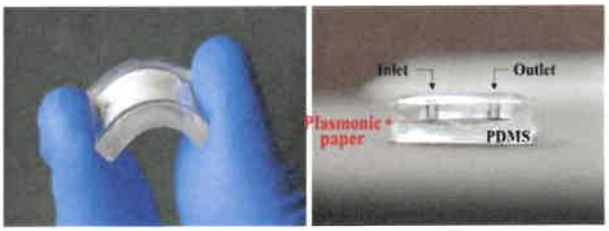
6. The description of the most important scientific achievements of the last 5 years

One of the top research priorities in clinical nanomedicine is the implementation of **innovative devices for real on-site Point-of-Care (PoC) tests**, able to identify and quantify with high specificity and sensitivity biological molecules- known as *biomarkers,* or different relevant contaminants directly in the end-user environments for fast *in vitro* diagnostic. Biomarkers can assess the pathogenic processes and monitor therapeutic progresses and, therefore, their accurate determination in human patient samples is an exceedingly important analytical activity. Conventional medical techniques, such as antibody-based immunoassays or microbial culture-based assays, require time-consuming procedures and costly equipment under centralized laboratory settings. Hence, to guarantee a healthy life style, both in the field of biomedical diagnostic, the development of **simple, affordable and accurate PoC procedures**, particularly in resource constrained settings, to allow both **rapid and portable determination** of various relevant target analytes, remains a mandatory need.

Considering the significant importance of the development and urgent implementation of miniaturized and personalized PoC test, Monica Focsan together with her very young and well-trained team are interested in designing **versatile optical, ultrasensitive and robust bio-nano-sensors** for the detection of specific disease biomarkers aiming to enable early diagnosis, improve disease treatment strategies and, overall, to improve the healthcare system and, implicitly, patients' nursing conditions. In this context, she acquired a solid expertise in the fabrication of **innovative sensitive, miniaturized and portable plasmonic biosensors having different configurations with interesting capabilities in terms of sensitivity, efficiency and reproducibility for promoting multimodal detection of relevant target analytes.** Commencing with a rather simple design of an immunosensor designed in aqueous solution based on gold nanobypiramids as signal transducers and amplifiers (*Anal. Chem. 2018, 90 (14), 8567-8575*), she was able to successfully integrate the plasmonic element in more elaborate nanosensor configurations, such as paper-based *(Front. Chem. 2019, 7, 55)* and microfluidic (*Nanotechnology 2020, 31 (33), 335502*), leading to **innovative and versatile biosensing chips**, which effectively combine advantages such as portability, miniaturization, on-site utilization, flexibility, ease-of-use, low costs and reduced target analyte volume and analysis time with greatly improved sensitivity and accuracy by implementing complementary spectroscopic detection techniques on the same nanoplatform. The developed plasmonic biosensing devices exhibit multiplexing

capabilities allowing the identification of multiple target analytes simultaneously. Thus, Monica Focsan brought a remarkable input to the progress of the nano(bio)sensing field.

Recently, her very young research team exploited the possibilities to efficiently integrate a calligraphed plasmonic paper in between 2 polymeric layers (see figure below) to develop a new versatile hybrid microfluidic chip as **an inexpensive, rapid and sensitive Metal Enhanced Fluorescent Point-of-Care platform** (patent submission) for the sensitive and specific detection of cardiac biomarkers. In fact, the development of such a simple, specific, cheap, and portable testing chips is highly desired for the rapid and efficient on-site cardiac biomarkers detection in order to diagnose and treat the cardiovascular diseases at an incipient stage. This important contribution in the biosensing field was appreciated by the scientific community, as the results were published in a high impact factor journal (*ACS Applied Materials & Interfaces,* 15, 48, 2023, 55925–55937).



Moreover, significant breakthrough unveiled by her work was **the development of easy-to-use, cost-effective albumin nanoparticles serving as nano-sized sensors for early and precise detection of copper ions**. These nanoparticles, with tunable ultraviolet-to-red autofluorescence emissions, serve as dual-agents for sensing and imaging. Demonstrating exceptional selectivity for copper ions over various biochemical components and metal ions, these nanoparticles achieve an impressive limit of detection as low as 1.9 μM—particularly relevant for clinical diagnostics. This marks a significant advancement in early detection of aberrant copper metabolism across diseases, including those with neurological manifestations and various other conditions. This important result was published last year in an article ranked in *Top 10 % articles,* namely *Int. J. Biol. Macromol.(International Journal of Biological Macromolecules,* 242, 2023, 125129).

Finally, one of her most important results, obtained in strong collaboration with a clinical group, consists in designing a portable microfluidic plasmonic chip for **fast real-time cardiac troponin I biomarker thermoplasmonic detection.** This new proposed detection method by Focsan and her team was successfully transferred to clinical settings for the early diagnosis of cardiac diseases, leading towards the

progress of personalized medicine. More importantly, this portable chip exhibits unique advantages compared with the currently employed clinical techniques, presenting a real potential for technology transfer. These impressive results were featured on the inside front cover of Journal of Materials Chemistry B (*Journal of Materials Chemistry B,* 12, 2024, 962-972).

All these scientific and academic achievements proved her ability to conduct and produce outstanding research with a future impact in nano(bio)sensing community, sustaining thus her application to "Șerban Țițeica" prize.

7. Narrative Curriculum Vitae

Monica Olivia FOCȘAN is currently Associate Professor at the Faculty of Physics and Scientific Researcher Grade I (CS I) at the Nanobiophotonics and Laser Microspectroscopy Center (NLMC, https://nanobiophotonics.ro), Interdisciplinary Research Institute in Bio-Nano-Sciences, Babeș-Bolyai University. After completing her PhD in physics at Babeș-Bolyai University, Romania/ Joseph Fourier University, France in 2010 and achieving Habilitation in 2019, Monica Focsan established a strong and motivated young research team at Nanobiophotonics and Laser Microspectroscopy Center (NLMC), Interdisciplinary Research Institute in Bio-Nano-Sciences (ICI-BNS), Babes-Bolyai University, currently supervising 2 post-doctoral researchers, 4 PhD students, 6 masters students as well as 7 bachelor students.

During her PhD thesis, realized in co-direction with Joseph Fourier University, France, she was involved in the synthesis of gold nanoparticles (AuNPs), characterization of their optical properties and demonstration of some biologically relevant applications. In the next 2 years, the research as post-doctoral fellow continued as member of Prof. Astilean's research group, concomitantly, also maintaining a strong scientific collaboration with Prof Marc Lamy de la Chapelle (Paris), Dr Patrice Baldeck' (Grenoble) and Prof. Stephane Parola' (Lyon) research teams. Throughout this time, her scientific interest was focused on the development of multifunctional plasmonic nanoparticles and their controlled coupling with various emitters in order to extend the application field of the fabricated hybrid nanostructures. One of the most important results obtained in collaboration with the prof Parola' French team consists in designing transparent plasmonic nano-containers which are able to protect fluorophores against photobleaching. This significant result for the plasmonic community has been published in a high-impact factor journal (***Nano Letters*** *11 (2011) 2043*). Then, the strong collaboration lead to another

valuable result consisting into the ability to control the emission enhancement in hybrid fluorescent bipyramidal –like gold nanostructures, a study published in *Nanoscale 6 (2014) 51384.* But Monica Focsan has always maintained a strong collaboration with the international academic community, which lead to obtain valuable scientific results. Today, **Monica has many international collaborations** (e.g., Assoc Prof. Frederic Lerouge, Universitaté Lyon 1, ENS de Lyon, France, Prof. Marc Lamy de la Chapelle, Le Mans Université, France, Prof. Anna Piperno, University of Messina, Italy, Prof. Luciano de Sio, Sapienza - University of Rome, Dr. Francesca Petronella, Italian National Research Council, Italy, Prof. Filippo Pierini, Institute of Fundamental Technological Research of Polish Academy of Sciences in Warsaw, Poland, Prof. Sebastian Wachsmann Hogiu, McGill University Canada and so on....), **being regarded as a respected expert in the plasmonic biosensing field.** Consequently, during her career, Monica was constantly invited at many prestigious conferences to present her scientific results (e.g. The 13th International Conference on Metamaterials, Photonic Crystals and Plasmonics (META'2023), 4th International Conference on Nanomaterials for Health, Energy and the Environment, Caloundra, Australia, International Workshops on Nano and Bio-Photonics" (IWNBP), 2022, Evian, France, etc...)

Furthermore, her expertise in the fields is proven by receiving **several national and international grants**, awarded through competition. For exemplification, she developed throughout a Partnership grant (focusing on applicative research, conducted by a consortium formed of two public research organizations and a private company) a robust plasmonic-microfluidic biosensor for the detection of specific biomarkers in simulated biological fluids. During this project, the most important plasmonic substrates with improved properties are: i) a nanoplatform based on annealed self-assembled gold nanospheres onto a glass substrate for the detection of the immunological biotin-streptavidin recognition interaction – the results were published in ***Biosensors and Bioelectronics Journal (first ranked journal in the world in the biosensing field)***, and ii) a flexible 3D gold nanocup platform implemented for the specific detection of antigen-antibody binding events, resulting in an article in the Scientific Reports journal (Nature group, ***Article in Top 100 read chemistry papers in 2017***). Finally, she won two grants for Young Researchers(https://sites.google.com/site/nanolight2014/;https://sites.google.com/site/nanoforall

2018/home/project-overview). The first aimed to develop a novel strategy for designing of multilayer core-shell AuNPs with optimized photophysical properties, during which she built up her research team at NLMC, formed by young researchers- postdoctoral members, PhD and master students. The second project proposed the development of an inexpensive new dual LSPR-SERS nanosensor with multiplex capability within a miniaturized portable sensing paper-based nanoplatform for the detection of multiple specific targets on the same substrate. During this period, she had the opportunity to establish **synergistic collaborations with medical doctors** and gain significant scientific knowledge on the fabrication of new ultrasensitive plasmonic biosensors for the detection of specific disease biomarkers. It is wondering to note that all grants conducted by Focsan were evaluated after their finalization with **the "excellent" score, proving once again her ability to propose and autonomously coordinate outstanding research in the biosensing field.**

So far, assoc. prof. Monica Focsan is co-author of over 100 scientific papers, from which **55 papers were published in the last 5 years**. On the whole, she got ~ 2400 citations (Scholar) and Hirsh index 29, proving her international visibility. Moreover, she is also the main author of 2 books, 4 book chapters (Elsevier, IOP Press and WSP), 2 O.S.I.M patent application forms, 2 O.S.I.M patents granted and over 100 conferences, from which 10 invited lectures at prestigious international conferences. At the same time, it is worth mentioning that she received several prestigious Research Awards including the L'Oreal -UNESCO Fellowship "Women in Science" (2016), Scientific Excellence diploma of National Award "Rada Mihalcea Young Researcher in Science and Engineering" (2016), Scientific Excellence diploma of Babes-Bolyai University (2016, 2020, 2024), Constantin Miculescu prize of the Romanian Academy (2018) and so on.

Finally, apart from her scientific activities since her PhD defense in 2009, she devoted her time and endless effort to attract, motivate and mentor bachelor, master, PhD students and postdoctoral researchers into carrying out innovative research in her lab, being the most significant, challenging and rewarding aspect in her Senior Researcher activity. Starting 2013, she supervised many bachelor students (Alexandru Vatamanu, Vlad Cucuiet, Andrei Dinca, Oana Raducu, Ana Maria Couti, Matei Craciunescu, Ilinca Muresan, Daria Stoia, Laura Nicoleta Burz, Andra Cristoreanu, Alina Porutiu, Irina Cruceru, Bianca Gheorma, Cosmin Filipiuc, Cristian Kalmar, Biliana Dreghici, etc..) and over ten master students (Sorina Suarasan, Maria Iliut, Andreea Campu, Laurentiu Susu, Biliana Dreghici, Filip Orzan, Alexandru Sabau, Daria Stoia, Calin Firta,

Cosmin Filipiuc, etc), their scientific contributions through bachelor and master thesis' being highly appreciated by the examination committee's and valued by their publication in prestigious journals. Moreover, at the moment, she is PhD coordinator of four PhD students (Daria Stoia, Radu Lapusan, Alexandru Holca, Ismaël Mahboub) and postdoctoral supervisor of Dr Andreea Campu and Dr Raluca Borlan. Conjointly with using her experience to encourage and define young researchers, she also devoted to obtain funding for improving the already existing infrastructure in her lab, thus ensuring a proper and competitive academic medium where students can perform experiments. In this matter, she dedicated a lot of time into building a new research laboratory in her institute.

As a summary, in the last 5 years, Monica Focsan received several prestigious research awards, gained several research grants as project leader (i.e. one Experimental Demonstration project -PED and two Young Research Team projects - TE), and as partner leader (i.e. two Experimental Demonstration project - PED), published a large number of articles (i.e. 55, generating an individual total article influence score of over 6) from which 20 articles as corresponding author in prestigious journals, all these being realized in tandem with her effort to train and develop a young research team in the plasmonic biosensing field.

8. Articles published in the last 5 years (2019-present)

1. A. Campu, I. Muresan, M. Potara, D. Lazar, L. Lazar, S. Cainap, D. M. Olinic, D. Maniu, S. Astilean and **M. Focsan***, Portable Microfluidic Plasmonic Chip for Fast Real-Time Cardiac Troponin I Biomarker Thermoplasmonic Detection, *Journal of Materials Chemistry B,* 12, 2024, 962-972 **(*corresponding author, IF 7, Front Cover of Journal of Materials Chemistry B).**
https://pubs.rsc.org/en/content/articlehtml/2023/tb/d3tb02190d

2. M. Negrutiu, S. Danescu, T. Popa, **M. Focșan**, ȘC Vesa, A Baican, Advancements in Basal Cell Carcinoma Diagnosis: Non-Invasive Imaging and Multimodal Approach, *Journal of Clinical Medicine* 13 (1), 2024, 39 **(IF 3.9).**
https://www.mdpi.com/2077-0383/13/1/39

3. A. Campu, I. Muresan, A-M Craciun, A. Vulpoi, S. Cainap, S. Astilean, and **M. Focsan*,** Innovative, Flexible, and Miniaturized Microfluidic Paper-Based Plasmonic Chip for Efficient Near-Infrared Metal Enhanced Fluorescence Biosensing and Imaging, *ACS Applied Materials & Interfaces,* 15, 48, 2023, 55925–55937, **(*corresponding author, IF 9.5).**
https://pubs.acs.org/doi/full/10.1021/acsami.3c08658

4. R. Borlan, O. Soritau, D. Maniu, A. Hada, A. Florea, S. Astilean, **M. Focsan*,** Albumin Nanoparticles with Tunable Ultraviolet-to-Red Autofluorescence for Label-Free Cell Imaging and Selective Biosensing of Copper Ions, *International Journal of Biological Macromolecules,* 242, 2023, 125129 **(*corresponding author, IF 8.2, TOP 10 % articles).**
https://www.sciencedirect.com/science/article/pii/S0141813023020238

5. V. Cucuiet, M. Iliuț, M. Potara, K. Magyari, S. Tripon, O. Soritau, D. Maniu, S. Astilean, M. **Focsan***, Gelatin-assisted fabrication of reduced NanoGraphene Oxide for dual-modal imaging of melanoma cells, *Colloids and Surfaces B: Biointerfaces,* 231, 2023, 113546 **(*corresponding author, IF 5.8).**
https://www.sciencedirect.com/science/article/pii/S0927776523004241

6. M. Raileanu, R. Borlan, A. Campu, L. Janosi, I. Turcu, **M. Focsan***, M. Bacalum, No country for old antibiotics! Antimicrobial peptides (AMPs) as next-generation treatment for skin and soft tissue infection, *International Journal of Pharmaceutics, 642 2023* 123169, https://www.sciencedirect.com/science/article/pii/S0378517323005896 **(*corresponding author, IF 5.8).**
https://www.sciencedirect.com/science/article/pii/S0378517323005896

7. G. Marc, A. Stana, M. Tertiș, C. Cristea, A. Ciorîță, Ș.-M. Drăgan, V.-A. Toma, R. Borlan, **M. Focșan**, A. Pîrnău, L. Vlase, S. Oniga, O. Oniga, Discovery of New Hydrazone-Thiazole Polyphenolic Antioxidants through Computer-Aided Design and In

Vitro Experimental Validation, *International Journal of Molecular Sciences*, 24 13277 2023 **(IF 5.6).**
https://www.mdpi.com/1422-0067/24/17/13277

8. I. Székely, Z. Kovács, M. Rusu, T. Gyulavári, M. Todea, **M. Focșan**, M. Baia, Z. Pap, Tungsten Oxide Morphology-Dependent Au/TiO2/WO3 Heterostructures with Applications in Heterogenous Photocatalysis and Surface-Enhanced Raman Spectroscopy, *Catalysts 13*(6), 2023, 1015 **(IF 3.9).**
https://www.mdpi.com/2073-4344/13/6/1015

9. A. Urcan, A. Criste, K. Szanto, R. Ștefan, M. Zahan, A. Muscă, **M. Focsan**, R. Burtescu, N. Olah, Antimicrobial and Antiproliferative Activity of Green Synthesized Silver Nanoparticles Using Bee Bread Extracts, *Pharmaceutics 15*(7), 2023, 1797 **(IF 5.4).**
https://www.mdpi.com/1999-4923/15/7/1797

10. D. Stoia, M. Nistor, M. Suciu, R. Borlan, A. Campu, D. Rugina, D. Maniu, S. Astilean, **M. Focsan***, NIR photothermal-activable drug-conjugated microcapsules for in vitro targeted delivery and release: an alternative treatment of diabetic retinopathy, *International Journal of Pharmaceutics,* 635, 2023, 122700 (***corresponding author, IF 5.8).**
https://www.sciencedirect.com/science/article/pii/S0378517323001205

11. Z.-R. Tóth, D. Debreczeni, T. Gyulavári, I. Székely, M. Todea, G. Kovács, **M. Focșan**, K. Magyari, L. Baia, Z. Pap, K. Hernadi, Rapid Synthesis Method of Ag3PO4 as Reusable Photocatalytically Active Semiconductor, *Nanomaterials*, 13, 2023, 89 **(IF 5.3).**
https://www.mdpi.com/2079-4991/13/1/89

12. D. Stoia, R. Pop, A. Campu, M. Nistor, S. Astilean, A. Pintea, M. Suciu, D. Rugina, **M. Focsan**, Hybrid polymeric therapeutic microcarriers for thermoplasmonic-triggered release of resveratrol, *Colloids and Surfaces B: Biointerfaces,* 220, 2022, 112915 **(corresponding author, IF 5.8).**
https://www.sciencedirect.com/science/article/pii/S0927776522005999

13. L. Susu, A. Vulpoi, S. Astilean, **M. Focsan***, Portable Plasmonic Paper-Based Biosensor for Simple and Rapid Indirect Detection of CEACAM5 Biomarker via Metal-Enhanced Fluorescence *International Journal of Molecular Sciences,* 23(19), 2022, 11982 **(*corresponding author, IF 5.6).**
https://www.mdpi.com/1422-0067/23/19/11982

14. A. Hada, M. Zetes, **M. Focsan**, S. Astilean A-M Craciun, Photoluminescent Histidine-Stabilized Gold Nanoclusters as Efficient Sensors for Fast and Easy Visual Detection of Fe Ions in Water Using Paper-Based Portable Platform, *International Journal of Molecular Sciences,* 23(14), 2022, 7728 **(IF 5.6).**
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15. A. Campu, I. Muresan, A-M. Craciun, S. Cainap, S. Astilean, **M Focsan***, Cardiac Troponin Biosensor Designs: Current Developments and Remaining Challenges, *International Journal of Molecular Sciences,* 23(14), 2022, 7728 **(*corresponding author, IF 5.6)**
https://www.mdpi.com/1422-0067/23/14/7728

16. A. Hada, A-M Craciun, **M. Focsan**, A. Vulpoi, E.-L. Borcan, S. Astilean, Glutathione-capped gold nanoclusters as near-infrared-emitting efficient contrast agents for confocal fluorescence imaging of tissue-mimicking phantoms, *Microchimica Acta*, 189, 2022, 337 **(IF 5.7).**
https://link.springer.com/article/10.1007/s00604-022-05440

17. M. Mic, A. Pîrnău, C. G. Floare, R. Borlan, **M. Focsan**, O. Oniga, O. Bogdan, L. Vlase, I. Oniga, G. Marc, Antioxidant Activity Evaluation and Assessment of the Binding Affinity to HSA of a New Catechol Hydrazinyl-Thiazole Derivative, *Antioxidants* 11(7), 2022, 1245 **(IF 7).**
https://www.mdpi.com/2076-3921/11/7/1245

18. B. Stoean, L. Gaina, C. Cristea, R. Silaghi-Dumitrescu, A. Branzanic, **M. Focsan**, E. Fischer-Fodor, B. Tigu, C. Moldovan, A. Cecan, P. Achimas-Cadariu, S. Astilean, L. Silaghi-Dumitrescu, New methylene blue analogues with N-piperidinyl-carbinol units: Synthesis, optical properties and in vitro internalization in human ovarian cancer cells, *Dyes and Pigments* 205, 2022, 110460 **(IF 4.5).**
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19. M. Potara, S. Suarasan, A-M. Craciun, **M. Focsan**, A-M. Hada, S. Astilean, Probing polyvinylpyrrolidone-passivated graphene oxide nanoflakes as contrast agents inside tissue-like phantoms via multimodal confocal microscopy, *Talanta* 247, 2022, 123581 **(IF 6.1).**
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20. D. R. Lazar, F. L. Lazar, C. Homorodean, C. Cainap, **M. Focsan,** S. Cainap, D. M. Olinic, High-Sensitivity Troponin: A Review on Characteristics, Assessment, and Clinical Implications, *Disease Markers*, 2022, 9713326 **(IF 3.4).**
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21. B. Boga, I. Székely, **M. Focșan,** M. Baia, T. Szabó, L. Nagy, Z. Pap, Sensor surface via inspiration from Nature: The specific case of electron trapping in TiO2/WO3 (· 0.33 H2O) and reaction center/WO3 (· 0.33 H2O) systems, *Applied Surface Science* 572, 2022, 151139 **(IF 6.7).**
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23. V. Chis, **M. Focsan**, M. de la Chapelle, R. Fausto, *Journal of Molecular Structure* 1250, 2022, 131971 **(IF 3.8).**
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24. A. Campu, F. Lerouge, D. Maniu, K. Magyari, **M. Focsan***, Ultrasensitive SEIRA detection using gold nanobipyramids: Toward efficient multimodal immunosensor, *Journal of Molecular Structure* 1246, 2021, 131160 **(corresponding author, IF 3.8).**
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25. A.-M. Hada, M. Zetes, **M. Focsan,** T. Nagy-Simon, A. M. Craciun, Novel paper-based sensing platform using photoluminescent gold nanoclusters for easy, sensitive and selective naked-eye detection of Cu2+, *Journal of Molecular Structure* 1244, 2021, 130990 **(IF 3.8).**
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26. S. Suarasan, C. Tira, M. M. Rusu, A.-M. Craciun, **M. Focsan***, Controlled Fluorescence Manipulation by Core-Shell Multilayer of Spherical Gold Nanoparticles: Theoretical and Experimental evaluation, *Journal of Molecular Structure* 1244, 2021, 130950 **(*corresponding author, IF 3.8).**
https://www.sciencedirect.com/science/article/pii/S0022286021010826

27. T. Nagy-Simon, O. Diaconu, **M. Focsan,** A. Vulpoi, I. Botiz, A.-M. Craciun, Pluronic stabilized conjugated polymer nanoparticles for NIR fluorescence imaging and dual phototherapy applications, *Journal of Molecular Structure* 1243, 2021, 130931 **(IF 3.8).**
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28. N. Sharma, Z. Pap, I. Székely, M. **Focsan,** G. Karacs, Z. Nemet, S. Garg, K. Hernadi, Combination of iodine-deficient BiOI phases in the presence of CNT to enhance photocatalytic activity towards phenol decomposition under visible light, *Applied Surface Science* 565, 2021, 150605 **(IF 7.392).**
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9. Research projects: **Director of 12 international/national grants– The total funding attracted >930.000 Euro;** Below are listed most important research projects awarded based on competition where the project leader was project coordinator/group lider UBB.

► *Ready-to-use fexible wound dressing with synergistic photothermal and antimicrobial capabilities;* Total amount: ~ 50.500 Euro, Project implementation period: June 2022-June 2024 https://www.nipne.ro/proiecte/pn3/66-proiecte.html; UBB Group Lider; Team Members: prof Simion Astilean, PhD Raluca Borlan, PhD Andreea Campu, Master Student Daria Stoia

► *Portable Plasmonic Nanochip for Fast-On-Site Cardiac Troponin Biomarker Quantitative Diagnostic Test,* Total amount: ~ 123.000 Euro. Project implementation period: Nov 2020 - Oct 2022, https://sites.google.com/view/nanofastdiag; Project Coordinator; Team members: MD Simona Cainap, MD Dan Olinic, MD Calin Homorodean, MD Leontin Lazar, MD Diana Lazar, Prof Simion Astilean, PhD Monica Potara, PhD Ana Maria Craciun, Post Doc. Andreea Campu, Master Student Ilinca Muresan

► *Flexible PDMS-integrated Plasmonic Paper as Versatile Nanochip for Metal Enhanced Fluorescence Biosensing*, Total amount: ~ 90.000 Euro. Project implementation period: Sept 2020 - Aug 2022, https://sites.google.com/view/chip4mef; Project Coordinator; Team members: PhD Ana Maria Craciun, PhD Andreea Campu, PhD Laurentiu Susu.

► *Theranostic microplatforms for multimodal therapy of human ocular pathologies, a new paradigm in biomedical applications,* Total amount: ~ 46.000 Euro. Project implementation period: Nov 2020 - Oct 2022, https://sites.google.com/usamvcluj.ro/microplatther; UBB Group Lider; Team members: Prof Simion Astilean, Post Doc. Andreea Campu, Post Doc. Raluca Borlan, Master Student Daria Stoia

► *Designing new, flexible and low-cost paper-based sensing nanoplatforms through plasmonic calligraphy for performing multiplexed ultrasensitive detection of cancer*

biomarkers, Total amount: ~ 100.000 EURO, Period: May 2018-Avril 2020, https://sites.google.com/site/nanoforall2018/home/project-overview; Project Coordinator

► *Plasmonic-Microfluidic Biosensor for Real Time Detection of Relevant Biomarkers (NanoFlu),* Funding agency: UEFISCDI; Partnerships program, 3 parteners (Babes-Bolyai University, University of Medicine and Pharmacy "Iuliu Hatieganu", Private Company-APRIL), Total amount: ~ 327.000 EURO, Period: July 2013-September 2017, https://sites.google.com/site/nanoflusensorsen/; Project Coordinator, 24 members, including master students, PhD students, Post Doct, Young and Senior Researchers

► *Controlling FRET by surface plasmon resonance in multilayer "core-shell" metallic nanoparticles towards efficient nanoscopic light sources (NanoLight),* Funding agency: UEFISCDI; Human Resources Research Projects for Young Independent Team, Total amount: ~122.150 EURO, Period: October 2015 - September 2017, https://sites.google.com/site/nanolight2014/; Project Coordinator; Team members: Post Doc Ana Maria Craciun, PhD Sorina Suarasan, Prof Simion Astilean, PhD Cristian Tira, Post Doc Adriana Vulpoi, PhD Andreea Campu

► *Microfluidic platform for integrated plasmonic detection (2plamidet), Funding agency: UEFISCDI;* Mobility International grant, Brancusi Romania-France, Total amount: ~ 5.000 EURO, Period: 2015-2016

- **Key Member** of more than 25 national and international grants (see https://www.nanobiophotonics.ro/projects/national-projects)

10. Patents

1. **M. Focsan**, A. Campu, S. Astilean, T. Murariu, I. Turcu; *Dispozitiv microfluidic plasmonic pe bază de nanoparticule bipiramidice de aur*; National Patent O.S.I.M. RO 133447 B1; 2021 - granted

2. A. Campu, M. Moruz, M.Potara, S. Astilean, **M. Focsan;** *Substrat flexibil micro-rugos de polidimetilsiloxan metalizat pentru detecție dual SPR-SERS*; National Patent O.S.I.M. RO 137390 A0; 2022.

3. A. Campu, I. Muresan, M.Potara, S. Astilean, S. Cainap, **M. Focsan;** *Nanosenzor plasmonic eficient pe bază de nanobipiramide de aur pentru detecția multimodală a biomarker-ului cardiac troponină I;* National Patent O.S.I.M. RO 136059 A0; 2022.

4. **M. Focsan**, A. Campu, A. M. Craciun, S. Astilean; *Dispozitiv microfluidic de detecție fabricat prin integrare de hârtie plasmonică caligrafiată în polidimetilsiloxan*; National Patent O.S.I.M. RO 135233 A0; 2021 – granted

Eligibility criteria

Articles published in the last 5 years (2019-present) as corresponding author in Q1 or Q2 journals - according to the last AIS classification

***corresponding author**

1. A. Campu, I. Muresan, M. Potara, D. Lazar, L. Lazar, S. Cainap, D. M. Olinic, D. Maniu, S. Astilean and **M. Focsan***, Portable Microfluidic Plasmonic Chip for Fast Real-Time Cardiac Troponin I Biomarker Thermoplasmonic Detection, *Journal of Materials Chemistry B,* 12, 2024, 962-972, **Front Cover of Journal of Materials Chemistry B.**

2. A. Campu, I. Muresan, A-M Craciun, A. Vulpoi, S. Cainap, S. Astilean, and **M. Focsan*,** Innovative, Flexible, and Miniaturized Microfluidic Paper-Based Plasmonic Chip for Efficient Near-Infrared Metal Enhanced Fluorescence Biosensing and Imaging, *ACS Applied Materials & Interfaces,* 15, 48, 2023, 55925–55937

3. R. Borlan, O. Soritau, D. Maniu, A. Hada, A. Florea, S. Astilean, **M. Focsan*,** Albumin Nanoparticles with Tunable Ultraviolet-to-Red Autofluorescence for Label-Free Cell Imaging and Selective Biosensing of Copper Ions, *International Journal of Biological Macromolecules,* 242, 2023, 125129 (**TOP 10 % articles).**

4. V. Cucuiet, M. Iliuț, M. Potara, K. Magyari, S. Tripon, O. Soritau, D. Maniu, S. Astilean, M. **Focsan***, Gelatin-assisted fabrication of reduced NanoGraphene Oxide for dual-modal imaging of melanoma cells, *Colloids and Surfaces B: Biointerfaces,* 231, 2023, 113546

5. D. Stoia, M. Nistor, M. Suciu, R. Borlan, A. Campu, D. Rugina, D. Maniu, S. Astilean, **M. Focsan***, NIR photothermal-activable drug-conjugated microcapsules for in vitro targeted delivery and release: an alternative treatment of diabetic retinopathy, *International Journal of Pharmaceutics,* 635, 2023, 122700

6. D. Stoia, R. Pop, A. Campu, M. Nistor, S. Astilean, A. Pintea, M. Suciu, D. Rugina, **M. Focsan***, Hybrid polymeric therapeutic microcarriers for thermoplasmonic-triggered release of resveratrol, *Colloids and Surfaces B: Biointerfaces,* 220, 2022, 112915

7. L. Susu, A. Vulpoi, S. Astilean, **M. Focsan***, Portable Plasmonic Paper-Based Biosensor for Simple and Rapid Indirect Detection of CEACAM5 Biomarker via Metal-Enhanced Fluorescence *International Journal of Molecular Sciences,* 23(19), 2022, 11982

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12. A. Campu, **M. Focsan***, F. Lerouge, R. Borlan, L. Tie, D. Rugina, S. Astilean, ICG-loaded gold nano-bipyramids with NIR activatable dual PTT-PDT therapeutic potential in melanoma cells, *Colloids and Surfaces B: Biointerfaces* 194, 2020, 111213

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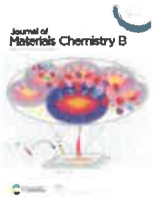
20. A. Campu, L. Susu, F. Orzan, D. Maniu, AM Craciun, A. Vulpoi, L. Roiban, **M. Focsan***, S. Astilean, Multimodal Biosensing on Paper-Based Platform Fabricated by Plasmonic Calligraphy Using Gold Nanobypiramids Ink, *Frontiers in Chemistry*, 7, 2019, 55

Selection Quantitative Criteria

1. Articles published in the last 5 years (2019-present) in Q1 journals, according to AIS classification

1. A. Campu, I. Muresan, M. Potara, D. Lazar, L. Lazar, S. Cainap, D. M. Olinic, D. Maniu, S. Astilean and **M. Focsan***, Portable Microfluidic Plasmonic Chip for Fast Real-Time Cardiac Troponin I Biomarker Thermoplasmonic Detection, *Journal of Materials Chemistry B,* 12, 2024, 962-972 **(*corresponding author, Front Cover of Journal of Materials Chemistry B).**



2. A. Campu, I. Muresan, A-M Craciun, A. Vulpoi, S. Cainap, S. Astilean, and **M. Focsan*,** Innovative, Flexible, and Miniaturized Microfluidic Paper-Based Plasmonic Chip for Efficient Near-Infrared Metal Enhanced Fluorescence Biosensing and Imaging, *ACS Applied Materials & Interfaces,* 15, 48, 2023, 55925–55937 **(*corresponding author).**

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4. A. Hada, A-M Craciun, **M. Focsan**, A. Vulpoi, E.-L. Borcan, S. Astilean, Glutathione-capped gold nanoclusters as near-infrared-emitting efficient contrast agents for confocal fluorescence imaging of tissue-mimicking phantoms, *Microchimica Acta*, 189, 2022, 337.

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7. M. Potara, S. Suarasan, A-M. Craciun, **M. Focsan**, A-M. Hada, S. Astilean, Probing polyvinylpyrrolidone-passivated graphene oxide nanoflakes as contrast agents inside tissue-like phantoms via multimodal confocal microscopy, *Talanta* 247, 2022, 123581.

8. B. Boga, I. Székely, **M. Focșan,** M. Baia, T. Szabó, L. Nagy, Z. Pap, Sensor surface via inspiration from Nature: The specific case of electron trapping in TiO2/WO3 (· 0.33 H2O) and reaction center/WO3 (· 0.33 H2O) systems, *Applied Surface Science* 572, 2022, 151139 **(TOP 1 article).**

9. N. Sharma, Z. Pap, I. Székely, **M. Focsan,** G. Karacs, Z. Nemet, S. Garg, K. Hernadi, Combination of iodine-deficient BiOI phases in the presence of CNT to enhance photocatalytic activity towards phenol decomposition under visible light, *Applied Surface Science* 565, 2021, 150605 **(TOP 1 article).**

10. R. Borlan, **M. Focsan***, M. Perde-Schrepler, O. Soritau, A. Campu, L. Gaina, E. Pall, B. Pop, O. Baldasici, C. Gherman, D. Stoia, D. Maniu, S. Astilean, Antibody Functionalized Theranostic Protein Nanoparticles for Synergistic Deep Red Fluorescence Imaging and Multimodal Therapy of Ovarian Cancer, *Biomaterials Science* 9, 2021, 6183-6202 **(*corresponding author).**

11. A.M Craciun, S. Suarasan, **M. Focsan**, S. Astilean, One-photon excited photoluminescence of gold nanospheres and its application in prostate specific antigen detection via fluorescence correlation spectroscopy (FCS), *Talanta,* 228, 2021, 122242

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13. S. Suarasan, AM Craciun, E Licarete, **M Focsan**, K Magyari, S Astilean, Intracellular dynamic disentangling of Doxorubicin release from luminescent nanogold carriers by Fluorescence Lifetime Imaging Microscopy (FLIM) under two-photon excitation, ACS applied materials & interfaces, *ACS Applied Materials & Interfaces*, 118, 2019, 7812-7822

14. A. Piperno, A. Mazzaglia, A. Scala, R. Pennisi, R. Zagami, G. Neri, S. M. Torcasio, C. Rosmini, P. G. Mineo, M. Potara, **M. Focsan**, S. Astilean, G. G. Zhou, M.T Sciortino, Casting Light on Intracellular Tracking of a New Functional Graphene-Based MicroRNA Delivery System by FLIM and Raman Imaging, *ACS Applied Materials & Interfaces,* 11, 2019, 46101-46111

15. Sz. Fodor, L.Baia, **M. Focșan**, K. Hernadi, Sz Papp, Designed and controlled synthesis of visible light active copper(I)oxide photocatalyst: From the cubes towards the polyhedrons - with Cu nanoparticles, *Applied Surface Science* 484, 2019, 175-183 **(TOP 1 article).**

2. Top 1% Highly Cited Researcher: NA

3. Research projects awarded based on competition in the last 5 years (2019-present), with minimum 3 members and the amount of the project > 100.000 Euro, as project leader.

1. Portable Plasmonic Nanochip for Fast-On-Site Cardiac Troponin Biomarker Quantitative Diagnostic Test, Total amount: ~ 123.000 Euro. Project implementation period: Nov 2020 - Oct 2022, 11 members, https://sites.google.com/view/nanofastdiag; Project Coordinator
2. Designing new, flexible and low-cost paper-based sensing nanoplatforms through plasmonic calligraphy for performing multiplexed ultrasensitive detection of cancer

biomarkers, Total amount: ~ 100.000 EURO, Period: May 2018-Avril 2020, 5 members, https://sites.google.com/site/nanoforall2018/home/project-overview;Project Coordinator

4. Invited professor

Sapienza University of Rome, Italy, October 2023, invited by Prof dr Luciano de SIO.

5. Editorial Activity

Guest editor - **Journal of Molecular Structure, Elsevier**, Special Issue *Bridging molecules and nanoparticles the way from optical spectroscopy to cancer therapy*, vol 1254F1, **2022.**

Guest editor for **International Journal of Molecular Sciences**– *"Molecules and Nanoparticles for Cancer Diagnosis and Therapy"*, **2022**

6. Total article influence score in the last 5 years (2019-present):

No Crt	Article' Details (2019-present)	Impact Factor (IF)	Article influence score (AIS)	Number of authors (ni)	AIS/ni
1	A. Campu, I. Muresan, M. Potara, D. Lazar, L. Lazar, S. Cainap, D. M. Olinic, D. Maniu, S. Astilean and **M. Focsan***, Portable Microfluidic Plasmonic Chip for Fast Real-Time Cardiac Troponin I Biomarker Thermoplasmonic Detection, *Journal of Materials Chemistry B, 2024, 12, 962-972*	7	0,955	10	0,0955
2	M. Negrutiu, S. Danescu, T. Popa, **M. Focșan**, ȘC Vesa, A Baican, Advancements in Basal Cell Carcinoma Diagnosis: Non-Invasive Imaging and Multimodal Approach, *Journal of Clinical Medicine* 13 (1), 2024, 39	3,9	0,911	6	0,1518

3	A. Campu, I. Muresan, A-M Craciun, A. Vulpoi, S. Cainap, S. Astilean, and **M. Focsan***, Innovative, Flexible, and Miniaturized Microfluidic Paper-Based Plasmonic Chip for Efficient Near-Infrared Metal Enhanced Fluorescence Biosensing and Imaging, *ACS Applied Materials & Interfaces,* 15, 48, 2023, 55925–55937	9,5	1,660	7	0,2371
4	R. Borlan, O. Soritau, D. Maniu, A. Hada, A. Florea, S. Astilean, **M. Focsan***, Albumin Nanoparticles with Tunable Ultraviolet-to-Red Autofluorescence for Label-Free Cell Imaging and Selective Biosensing of Copper Ions, *International Journal of Biological Macromolecules,* 242, 2023, 125129	8,2	0,920 Top 10%	7	0,1314
5	V. Cucuiet, M. Iliuţ, M. Potara, K. Magyari, S. Tripon, O. Soritau, D. Maniu, S. Astilean, M. **Focsan***, Gelatin-assisted fabrication of reduced NanoGraphene Oxide for dual-modal imaging of melanoma cells, *Colloids and Surfaces B: Biointerfaces,* 231, 2023, 113546	5,8	0,695	9	0,0772
6	M. Raileanu, R. Borlan, A. Campu, L. Janosi, I. Turcu, **M. Focsan***, M. Bacalum, No country for old antibiotics! Antimicrobial peptides (AMPs) as next-generation treatment for skin and soft tissue infection, *International Journal of Pharmaceutics, 642 2023* 123169	5,8	0,718	7	0,1025
7	G. Marc, A. Stana, M. Tertiş, C. Cristea, A. Ciorîţă, Ş.-M. Drăgan, V.-A. Toma, R. Borlan, **M. Focșan**, A. Pîrnău, L. Vlase, S.	5,6	1,030	13	0,0792

	Oniga, O. Oniga, Discovery of New Hydrazone-Thiazole Polyphenolic Antioxidants through Computer-Aided Design and In Vitro Experimental Validation, *International Journal of Molecular Sciences*, 24 13277 2023				
8	I. Székely, Z. Kovács, M. Rusu, T. Gyulavári, M. Todea, **M. Focșan**, M. Baia, Z. Pap, Tungsten Oxide Morphology-Dependent Au/TiO2/WO3 Heterostructures with Applications in Heterogenous Photocatalysis and Surface-Enhanced Raman Spectroscopy, *Catalysts 13*(6), 2023, 1015	3,9	0,592	8	0,074
9	A. Urcan, A. Criste, K. Szanto, R. Ștefan, M. Zahan, A. Muscă, **M. Focsan**, R. Burtescu, N. Olah, Antimicrobial and Antiproliferative Activity of Green Synthesized Silver Nanoparticles Using Bee Bread Extracts, *Pharmaceutics 15*(7), 2023, 1797	5,4	0,756	9	0,084
10	D. Stoia, M. Nistor, M. Suciu, R. Borlan, A. Campu, D. Rugina, D. Maniu, S. Astilean, **M. Focsan***, NIR photothermal-activable drug-conjugated microcapsules for in vitro targeted delivery and release: an alternative treatment of diabetic retinopathy, *International Journal of Pharmaceutics,* 635, 2023, 122700	5,8	0,718	9	0,0797
11	Z.-R. Tóth, D. Debreczeni, T. Gyulavári, I. Székely, M. Todea, G. Kovács, **M. Focșan**, K. Magyari, L. Baia, Z. Pap, K. Hernadi, Rapid Synthesis Method of Ag3PO4 as Reusable Photocatalytically	5,3	0,712	11	0,0647

	Active Semiconductor, *Nanomaterials*, 13, 2023, 89				
12	D. Stoia, R. Pop, A. Campu, M. Nistor, S. Astilean, A. Pintea, M. Suciu, D. Rugina, **M. Focsan**, Hybrid polymeric therapeutic microcarriers for thermoplasmonic-triggered release of resveratrol, *Colloids and Surfaces B: Biointerfaces,* 220, 2022, 112915	5,8	0,695	9	0,0772
13	L. Susu, A. Vulpoi, S. Astilean, **M. Focsan***, Portable Plasmonic Paper-Based Biosensor for Simple and Rapid Indirect Detection of CEACAM5 Biomarker via Metal-Enhanced Fluorescence *International Journal of Molecular Sciences,* 23(19), 2022, 11982	5,6	1,030	4	0,2575
14	A. Hada, M. Zetes, **M. Focsan**, S. Astilean A-M Craciun, Photoluminescent Histidine-Stabilized Gold Nanoclusters as Efficient Sensors for Fast and Easy Visual Detection of Fe Ions in Water Using Paper-Based Portable Platform, *International Journal of Molecular Sciences*	5,6	1,030	5	0,206
15	A. Campu, I. Muresan, A-M. Craciun, S. Cainap, S. Astilean, **M Focsan***, Cardiac Troponin Biosensor Designs: Current Developments and Remaining Challenges, *International Journal of Molecular Sciences*	5,6	1,030	6	0,1716
16	A. Hada, A-M Craciun, **M. Focsan**, A. Vulpoi, E.-L. Borcan, S. Astilean, Glutathione-capped gold nanoclusters as near-infrared-emitting efficient contrast	5,7	0,741	6	0,1235

	agents for confocal fluorescence imaging of tissue-mimicking phantoms, *Microchimica Acta*, 189, 2022, 337				
17	M. Mic, A. Pîrnău, C. G. Floare, R. Borlan, **M. Focsan**, O. Oniga, O. Bogdan, L. Vlase, I. Oniga, G. Marc, Antioxidant Activity Evaluation and Assessment of the Binding Affinity to HSA of a New Catechol Hydrazinyl-Thiazole Derivative, *Antioxidants* 11(7), 2022, 1245	7	0.946	10	0,0946
18	B. Stoean, L. Gaina, C. Cristea, R. Silaghi-Dumitrescu, A. Branzanic, **M. Focsan**, E. Fischer-Fodor, B. Tigu, C. Moldovan, A. Cecan, P. Achimas-Cadariu, S. Astilean, L. Silaghi-Dumitrescu, New methylene blue analogues with N-piperidinyl-carbinol units: Synthesis, optical properties and in vitro internalization in human ovarian cancer cells, *Dyes and Pigments* 205, 2022, 110460	4,5	0,509	12	0,0424
19	M. Potara, S. Suarasan, A-M. Craciun, **M. Focsan**, A-M. Hada, S. Astilean, Probing polyvinylpyrrolidone-passivated graphene oxide nanoflakes as contrast agents inside tissue-like phantoms via multimodal confocal microscopy, *Talanta* 247, 2022, 123581	6,1	0,795	6	0,1325
20	D. R. Lazar, F. L. Lazar, C. Homorodean, C. Cainap, **M. Focsan,** S. Cainap, D. M. Olinic, High-Sensitivity Troponin: A Review on Characteristics, Assessment, and Clinical Implications, *Disease Markers*, 2022, 9713326	3,464	0,619	7	0,0884

21	B. Boga, I. Székely, **M. Focșan,** M. Baia, T. Szabó, L. Nagy, Z. Pap, Sensor surface via inspiration from Nature: The specific case of electron trapping in TiO2/WO3 (· 0.33 H2O) and reaction center/WO3 (· 0.33 H2O) systems, *Applied Surface Science* 572, 2022, 151139	6,7	0,867 Top 1	7	0,1238
22	R. Ghiman, R. Pop, D. Rugina, **M. Focsan,** Recent progress in preparation of microcapsules with tailored structures for bio-medical applications, *Journal of Molecular Structure* 1248, 2022, 131366	3,8	0,331	4	0,0828
23	V. Chis, **M. Focsan**, M. de la Chapelle, R. Fausto, *Journal of Molecular Structure* 1250, 2022, 131971	3,8	0,331	4	0,0828
24	A. Campu, F. Lerouge, D. Maniu, K. Magyari, **M. Focsan*,** Ultrasensitive SEIRA detection using gold nanobipyramids: Toward efficient multimodal immunosensor, *Journal of Molecular Structure* 1246, 2021, 131160	3,8	0,331	5	0,0662
25	A.-M. Hada, M. Zetes, **M. Focsan,** T. Nagy-Simon, A. M. Craciun, Novel paper-based sensing platform using photoluminescent gold nanoclusters for easy, sensitive and selective naked-eye detection of Cu2+, *Journal of Molecular Structure* 1244, 2021, 130990	3,8	0,331	5	0,0662
26	S. Suarasan, C. Tira, M. M. Rusu, A.-M. Craciun, **M. Focsan*,** Controlled Fluorescence Manipulation by Core-Shell Multilayer of Spherical Gold Nanoparticles: Theoretical and	3,8	0,331	5	0,0662

	Experimental evaluation *Journal of Molecular Structure* 1244, 2021, 130950				
27	T. Nagy-Simon, O. Diaconu, **M. Focsan,** A. Vulpoi, I. Botiz, A.-M. Craciun, Pluronic stabilized conjugated polymer nanoparticles for NIR fluorescence imaging and dual phototherapy applications, *Journal of Molecular Structure* 1243, 2021, 130931	3,8	0,331	6	0,0552
28	N. Sharma, Z. Pap, I. Székely, M. **Focsan,** G. Karacs, Z. Nemet, S. Garg, K. Hernadi, Combination of iodine-deficient BiOI phases in the presence of CNT to enhance photocatalytic activity towards phenol decomposition under visible light, *Applied Surface Science* 565, 2021, 150605	6.7	0,867 Top 1	8	0,1083
29	M. Nistor, **M. Focsan,** L. Gaina, M. Cenariu, A. Pintea, C. Socaciu, D. Rugina, Real-time fluorescence imaging of anthocyanins complexed with diphenylboric acid 2-aminoethyl inside B16–F10 melanoma cells, *Phytochemistry* 189, 2021, 112849	3.8	0,620	7	0,0886
30	R. Borlan, D. Stoia, L. Gaina, A. Campu, G. Marc, M. Perde-Schrepler, M. Silion, D. Maniu, **M. Focsan*,** S. Astilean, Fluorescent Phtalocyanine-Encapsulated Bovine Serum Albumin Nanoparticles: Their Deployment as Therapeutic Agents in the NIR Region, *Molecules,* 26, 2021, 4679	4.6	0,660	10	0,066
31	R. Borlan, **M. Focsan*,** M. Perde-Schrepler, O. Soritau, A. Campu, L. Gaina, E. Pall, B. Pop, O. Baldasici, C.	6.6	1,002	13	0,0770

	Gherman, D. Stoia, D. Maniu, S. Astilean, Antibody Functionalized Theranostic Protein Nanoparticles for Synergistic Deep Red Fluorescence Imaging and Multimodal Therapy of Ovarian Cancer, *Biomaterials Science* 9, 2021, 6183-6202				
32	M. Potara, T. Nagy-Simon, **M. Focsan,** E. Licarete, O. Soritau, A. Vulpoi, S. Astilean, Folate-targeted Pluronic-chitosan nanocapsules loaded with IR780 for near-infrared fluorescence imaging and photothermal-photodynamic therapy of ovarian cancer, *Colloids Surf. B Biointerfaces,* 203, 2021, 111755	5,8	0,695	7	0,0993
33	R. Ghiman, M. Nistor, **M. Focșan*,** A. Pintea, S. Aștilean and D. Rugina, Fluorescent Polyelectrolyte System to Track Anthocyanins Delivery inside Melanoma Cells, *Nanomaterials* 11, 2021, 782	5,3	0,712	6	0,1187
34	B. Stoean, D. Rugina, **M. Focsan**, A-M. Craciun, M. Nistor, T. Lovasz, A. Turza, I-D. Porumb, E. Gál, C. Cristea, L. Silaghi-Dumitrescu, S. Astilean and L. Gaina, Novel (Phenothiazinyl)Vinyl-Pyridinium Dyes and Their Potential Applications as Cellular Staining Agents, *International Journal of Molecular Sciences,* 22, 2021, 2985	5,6	1,030	13	0,0792
35	R. Borlan, **M. Focsan*,** D. Maniu, S. Astilean, Interventional NIR Fluorescence Imaging of Cancer: Review on Next Generation of Dye-Loaded Protein-Based Nanoparticles for Real-Time Feedback During Cancer Surgery, *International*	8	1,015	4	0,2538

	Journal of Nanomedicine, 16, 2021, 2147—2171				
36	A.M Craciun, S. Suarasan, **M. Focsan**, S. Astilean, One-photon excited photoluminescence of gold nanospheres and its application in prostate specific antigen detection via fluorescence correlation spectroscopy (FCS), *Talanta,* 228, 2021, 122242	6,1	0,795	4	0,1988
37	L. De Sio, B. Ding, **M. Focsan**, K. Kogermann, P. Pascoal-Faria, F. Petronella, G. Mitchell, E. Zussman, F. Pierini, Personalized Reusable Face Masks with Smart Nano-Assisted Destruction of Pathogens for COVID-19: A Visionary Road, *Chem. Eur. J.,* 27, 2021, 1-20	4,3	0,918	9	0,102
38	A.-M. Hada, A.-M. Craciun, M. Focsan, R. Borlan, O. Soritau, M. Todea, S. Astilean, Folic acid functionalized gold nanoclusters for enabling targeted fluorescence imaging of human ovarian cancer cells, *Talanta,* 225, 2021, 121960	6,1	0,795	7	0,1136
39	A. Campu, **M. Focsan***, F. Lerouge, R. Borlan, L. Tie, D. Rugina, S. Astilean, ICG-loaded gold nano-bipyramids with NIR activatable dual PTT-PDT therapeutic potential in melanoma cells, *Colloids and Surfaces B: Biointerfaces* 194, 2020, 111213	5,8	0,695	7	0,0992
40	L. Susu, A. Campu, S. Astilean and **M Focsan***, Calligraphed Selective Plasmonic Arrays on Paper Platforms for Complementary Dual Optical "ON/OFF	5,3	0,712	4	0,178

	Switch" Sensing, *Nanomaterials* 10(6), 2020, 1025				
41	A. Campu, F. Lerouge, A-M. Craciun, T. Murariu, I. Turcu, S. Astilean and **M. Focsan***, Microfluidic platform for integrated plasmonic detection in laminal flow, *Nanotechnology* 31(33), 2020, 335502	3,5	0,555	7	0,0793
42	R. Borlan, A.S. Tatar, O. Soritau, D. Maniu, G. Marc, A. Florea, **M. Focsan***, S. Astilean, Design of fluorophore-loaded human serum albumin nanoparticles for specific targeting of NIH: OVCAR3 ovarian cancer cells, *Nanotechnology* 31 (31), 2020, 315102	3,5	0,555	8	0,0694
43	A.-I. Pricopie, **M. Focșan***, I. Ionuț, G. Marc, L. Vlase, L. Găină, D. C. Vodnar, E. Simon, G. Barta, A. Pîrnău and O. Oniga, Novel 2,4-Disubstituted-1,3-Thiazole Derivatives: Synthesis, Anti-Candida Activity Evaluation and Interaction with Bovine Serum Albumine, *Molecules* 25(5), 2020, 1079	4,6	0,660	11	0,06
44	L. Tie, M. Răileanu, M. Bacalum, I. Codita, Ș. M. Negrea, C.Ș. Caracoti, E.C Drăgulescu, A. Campu, S. Astilean and **M. Focsan***, Versatile Polypeptide-Functionalized Plasmonic Paper as Synergistic Biocompatible and Antimicrobial Nanoplatform, *Molecules* 25(14), 2020, 3182	4,6	0,660	10	0,066
45	D. Caccamo, M. Currò, R. Ientile, E AM Verderio, A. Scala, A. Mazzaglia, R. Pennisi, M. Musarra-Pizzo, R. Zagami, G.	5,6	1,030	16	0,0643

	Neri, C. Rosmini, M. Potara, **M. Focsan**, S. Astilean, A. Piperno and M. T. Sciortino, Intracellular Fate and Impact on Gene Expression of Doxorubicin/Cyclodextrin-Graphene Nanomaterials at Sub-Toxic Concentration, *International Journal of Molecular Sciences,* 21(14), 2020, 4891				
46	E. Molnar, E. Gal, L. Gaina, C. Cristea, E. Fischer-Fodor, M. Perde-Schrepler, P. Achimas-Cadariu, **M. Focsan**, L. Silaghi-Dumitrescu, Novel Phenothiazine-Bridged Porphyrin-(Hetero)aryl dyads: Synthesis, Optical Properties, In Vitro Cytotoxicity and Staining of Human Ovarian Tumor Cell Lines, *International Journal of Molecular Sciences,* 21(9), 2020, 3178	5,6	1,030	9	0,1144
47	A. Terec, A. Crisan, A.M. Craciun, I. Mihalache, M. Focsan, C. Socaci, D. Maniu, S. Astilean, M. Veca, Surface passivation of carbon nanoparticles with 1,2-phenylenediamine towards photoluminescent carbon dots, *Rev. Roum. Chim,* 65, 2020, 559-566	0,5	0,052	9	0,0058
48	C. Tudor, T. Bohn, M. Iddir, F. V. Dulf, **M. Focşan**, D. Rugină, and A. Pintea, Sea Buckthorn Oil as a Valuable Source of Bioaccessible Xanthophylls, *Nutrients* 12(1), 2020, 76	5,9	1,103	7	0,1576
49	A. Campu, AM Craciun, **M Focsan***, S Astilean, Assessment of the photothermal conversion efficiencies of tunable gold bipyramids under irradiation by two laser	3,5	0,555	4	0,1388

	lines in a NIR biological window, *Nanotechnology* 30(40), 2019, 405701				
50	D. Rugină*, R. Ghiman*, **M. Focșan***, F. Tăbăran, F. Copaciuc, M. Suciu, A. Pintea, S. Aștilean, Resveratrol-delivery vehicle with anti-VEGF activity carried to human retinal pigmented epithelial cells exposed to high-glucose induced conditions, *Colloids and Surfaces B: Biointerfaces* 181, 2019, 66-75.	5,8	0,695	8	0,0869
51	S. Suarasan, AM Craciun, E Licarete, **M Focsan**, K Magyari, S Astilean, Intracellular dynamic disentangling of Doxorubicin release from luminescent nanogold carriers by Fluorescence Lifetime Imaging Microscopy (FLIM) under two-photon excitation, ACS applied materials & interfaces, *ACS Applied Materials & Interfaces*, 118, 2019, 7812-7822	9,5	1,660	6	0,2767
52	A. Piperno, A. Mazzaglia, A. Scala, R. Pennisi, R. Zagami, G. Neri, S. M. Torcasio, C. Rosmini, P. G. Mineo, M. Potara, **M. Focsan**, S. Astilean, G. G. Zhou, M.T Sciortino, Casting Light on Intracellular Tracking of a New Functional Graphene-Based MicroRNA Delivery System by FLIM and Raman Imaging, *ACS Applied Materials & Interfaces,* 11, 2019, 46101-46111	9,5	1,660	14	0,1186
53	L. Tie, **M Focsan***, J Bosson, C Tira, A Campu, A Vulpoi, S Astilean Controlling the end-to-end assembly of gold nanorods to enhance the plasmonic response in near	2,3	0,260	7	0,0371

	infrared, *Materials Research Express* 6 (9), 2019, 095038				
54	Sz. Fodor, L.Baia, **M. Focșan**, K. Hernadi, Sz Papp, Designed and controlled synthesis of visible light active copper(I)oxide photocatalyst: From the cubes towards the polyhedrons - with Cu nanoparticles, *Applied Surface Science* 484, 2019, 175-183	6,7	0,867	5	0,1734
55	A. Campu, L. Susu, F. Orzan, D. Maniu, AM Craciun, A. Vulpoi, L. Roiban, **M. Focsan***, S. Astilean, Multimodal Biosensing on Paper-Based Platform Fabricated by Plasmonic Calligraphy Using Gold Nanobypiramids Ink, *Frontiers in Chemistry*, 7, 2019, 55	5,5	0,961	9	0,1068
	TOTAL Article influence score (2019-present):				**6,0516**

* *Corresponding author*

Highlighted Red color – Q1 article according to the last AIS classification https://uefiscdi.gov.ro/scientometrie-baze-de-date (june 2023)

Highlighted Yellow color – Q2 article according to last AIS classification https://uefiscdi.gov.ro/scientometrie-baze-de-date (june 2023)

Scientific and academic achievements for selection qualitative criteria

~ whole academic career ~

Monica Olivia FOCSAN (born IOSIN), PhD (since 2010), Habilitation (since 2019), Associate Professor at the Faculty of Physics, Babes-Bolyai University (UBB) and Senior Scientific Researcher grade I (CS I) at the Nanobiophotonics and Laser Microspectroscopy Center (NLMC), Interdisciplinary Research Institute in Bio-Nano-Sciences (ICI-BNS), UBB, Cluj-Napoca, Romania.

Responsible of the NMLC in the frame of VIRTUAL LABS, UBB

ORCID: 0000-0001-6735-5146
Google Scholar:
https://scholar.google.ro/citations?hl=ro&user=ECM7N6sAAAAJ&view_op=list_works&sortby=pubdate
Email: ;
Phone: -
Web: *https://www.nanobiophotonics.ro/member/monica-focsan-100 (for the full list of my articles please consult the link)*

PERSONAL DATA

- Born 30 August 1982, Brad, Hunedoara, Romania
- Married, 1 child

PROFESSIONAL CAREER

- **October 2023-present:** Associate Professor at the Faculty of Physics, Biomolecular Physics Department, Babes-Bolyai University
- **18 October 2019:** Habilitation thesis defense: *Designed Plasmonic-Based NanoPlatforms to Provide Multiple Functionalities from Efficient Nanoscopic Light Sources to Integrated Multimodal Biosensing and Diagnosis*
- **2016-present:** Scientific Researcher I (CS I), ICI-BNS, Babes-Bolyai University
- **2012-2013**: Maternity leave
- **2012-2016:** Scientific Researcher grade III (CS III), Babes-Bolyai University
- **2010-2012:** Postdoctoral Fellowship, Babes-Bolyai University, Romania (Prof. Simion Astilean group)
- **2006-2009:** PhD in Physics, co-direction Joseph Fourier University, France/Babes-Bolyai University, Romania. Thesis title: *Synthesis of Gold Nanoparticles and Microfabrication of Protein Structures for Biological Applications*
- **2005-2007:** M. Sc. in Physics, Babes-Bolyai University, 6 months Erasmus Research internship at Joseph Fourier University, Grenoble, France. Master thesis: *Applications de l'absorption à deux photons à la photochimie intracellulaire in vivo*

• **2001-2005:** B. Sc. in Medical Physics, Babes-Bolyai University, Faculty of Physics, Romania

VISIBILITY OF THE SCIENTIFIC ACTIVITY

• **Publications**: **103 articles (95 ISI),** from which 46 as a main author/corresponding author, some of them in prestigious journals such as Nano Letters (IF-13.19), Int. J. Biol. Macromol (IF-8.2), Biosensors&Bioelectronics (IF-7.8), ACS Appl Mater Interfaces (IF-9.5), Nanoscale (IF-6.7), Biomaterials Science IF-7.59, Analytical Chemistry (6.4), J. Pharm (IF - 6.5), Colloids Surfaces B (IF - 5.9); J Phys Chem C (IF-4.8), etc

• 2 books, 4 book chapters (Elsevier, IOP Press and WSP), 2 O.S.I.M patent applications form, 2 O.S.I.M patents granted

• **Hirsh Index: 29** (Scholar)\27 (WoS), citations: ~2400 (Scholar)

• **International Conferences:** over 100 communications; *10* invited *lectures at prestigious international conferences;*

TEACHING ACTIVITIES

• **November 2023:** *Course **ABC in Publishing**,* Bachelor, Master and Doctoral level, UBB.

• **September 22, 2023***:* Presentation of the Faculty of Physics during the ***"Long weekend for high school students at UBB"*** event

• **2023-present:** *Course and laboratory: **Medical equipment**,* Bachelor level year II course, Faculty of Physics, Babes-Bolyai University.

• **2022-present:** *Course and laboratory: **Molecular spectroscopy complements***, Master level year I, Faculty of Physics, Babes-Bolyai University.

• **2022-present:** *Course and laboratory: **NanoBiophotonics***, Master level years I-II course, Faculty of Physics, Babes-Bolyai University.

• **2022-present:** *Course, seminar and laboratory: **Technological applications of lasers: Biophotonics***, Bachelor level year III course, Faculty of Physics, Babes-Bolyai University.

• **2020-present:** *Course: **Nanostructures and Macromolecular systems** (20 %), Doctoral School of Physics,* Babes-Bolyai University.

• **2013-2016:** Teaching laboratory: "*Monitoring protein denaturation using fluorescence spectroscopy*", 1st year master students, Faculty of Physics, Babes-Bolyai University.

• **2011:** *Course: **General Optics***, 2nd year undergraduate students, Faculty of Physics, Babes-Bolyai University, Zalau Extension.

• **2010-2016:** *Teaching laboratory: Molecular Fluorescence,* 1st year master students, Faculty of Physics, Babes-Bolyai University.

• **2010-2016:** Teaching laboratory practice: "*Introduction to nanotechnology*", 2nd year undergraduate students, Faculty of Physics, Babes-Bolyai University.

• **2017-2018:** French undergraduate program: "*Biophysics*", University of Agricultural Science and Veterinary Medicine (USAMV), Cluj-Napoca.

SUPERVISION OF GRADUATE STUDENTS AND POSTDOCTORAL FELLOWS

- **2023-2024:** Coordinator of the bachelor student Vlad Cucuiet awarded with 1 year Special Scholarships for Research Activity, from Babes-Bolyai University, Cluj-Napoca.
- **2022-2024** – Mentor of PhD Andreea Câmpu during her postdoctoral fellow.
- **2022-2023:** Coordinator of the bachelor students Madalina Tudor, Mihnea Moruz and Vlad Cucuiet awarded with 1 year Special Scholarships for Research Activity, from Babes-Bolyai University, Cluj-Napoca.
- **2021-2022:** Coordinator of the master student Daria Stoia awarded with 1year Special Scholarships for Research Activity, from Babes-Bolyai University, Cluj-Napoca.
- **2021 – present:** Advisor of 4 PhD students (Radu LAPUSAN, Alexandru HOLCA, Daria STOIA and Ismaël MAHBOUB)
- **2010-present: Supervision of 18 undergraduate students and 10 master students.**

SPECIALIZATIONS AND QUALIFICATIONS

- **11.2023:** Institut des Molécules et des Matériaux du Mans, Mans University, France, invited professor.
- **12.2018**: SPINTEC Grenoble, France, invited researcher.
- **12.2018**: Ecole Normale Superieure de Lyon, Claude Bernand University, Lyon, France., invited researcher.
- **6.06.2015-14.06.2015 and oct-nov 2015**: Ecole Normale Superieure de Lyon, Claude Bernand University, Lyon, France. Research subject: *Microfluidic platform for integrated plasmonic detection*
- **25.02.2014-27.02.2014**: „6th European short course on Time-Resolved Microscopy and Correlation Spectroscopy" and „SymPhoTime Training Day" at PicoQuant, Berlin, Germany
- **1.10.2011-15.12.2011:** Laboratoire Interdisciplinaire de Physique, Grenoble, France, Research subject: *Laser Fabrication of 3D highly active and ultrasensitive Surface-enhanced Raman scattering microchips in microfluidic channels*
- **10.06.2011-18.06.2011:** Paris 13 University, Faculty of Medicine, Research subject: *Localized Surface Plasmon Resonance biosensor for protein detection*
- **2006-2009** (more than 1 year): Laboratoire Interdisciplinaire de Physique, Joseph-Fourier University. Research subject: *Microfabrication of protein structures for biological applications*
- **15.02.2006-1.07.2006:** Master internship, Laboratoire Interdisciplinaire de Physique, Joseph-Fourier University, Grenoble. Research subject: *Laser fabrication of biocompatible 3D protein microstructures*

PARTICIPATION TO INTERNATIONAL/NATIONAL PhD COMMITTEE

- **2022:** Reviewer of the Mina RĂILEANU's PhD defence committee, University of Bucharest
- **2022:** Reviewer of the Madalina Nistor's PhD defence committee, University of Agricultural Sciences and Veterinary Medicine, Cluj Napoca.
- **2021:** Reviewer of the Cristian Tira's PhD defence committee, Babeş-Bolyai University.
- **2021:** Reviewer of the Raluca Borlan's PhD defence committee, Babeş-Bolyai University.

- **2021:** Reviewer of the Tie Bi Leopold's PhD defence committee, Babeş-Bolyai University.
- **2020:** Reviewer of the Andreea Campu's PhD defence committee, Babeş-Bolyai University.
- **2018:** Reviewer of the Micouin Guillaume's PhD defence committee, Lyon 1 University, France.
- **2016 – present**: Scientific advisor in 7 doctoral committees (Babeş-Bolyai University and. University of Agricultural Sciences and Veterinary Medicine, respectively)

HONORS AND AWARDS

- **2024:** Scientific Excellence diploma of Babeș-Bolyai University
- **2023:** Excellentia Teacher at the Xth edition of the Excellentia Awards, UBB
- **2023: Experienced Researchers Teams trophy** at the 1 st Romanian Research Gala organized by the Ministry of Research, Innovation and Digitalization.
- **2021: Gold Medal at EUROINVENT**
- **2021: Excellence Diploma** by the National Institute for Research, Development, Urban Planning and Sustainable Territorial Development "URBAN-INCERC
- **2020: Advanced Fellowship,** Institute for Advanced Studies in Science and Technology-STAR-UBB Institute- UBB's institute of Excellence
- **2020:** Scientific Excellence diploma of Babeș-Bolyai University
- **2018: Constantin Miculescu prize of the Romanian Academy**
- **2018: Interview for Scientific Excellence,** https://news.ubbcluj.ro/monica-focsan-phd-senior-scientific-researcher-i-cs-i-at-the-nanobiophotonics-and-laser-microspectroscopy-center-interdisciplinary-research-institute-in-bio-nano-sciences/
- **2018: Advanced Fellowship,** Institute for Advanced Studies in Science and Technology-STAR-UBB Institute- UBB's institute of Excellence
- **2016:** Scientific Excellence diploma of National Award "*Rada Mihalcea Young Researcher in Science and Engineering*".
- **2016: L'oreal -UNESCO Fellowship "*Women in Science*"**
- **2016:** Scientific Excellence diploma of Babeș-Bolyai University
- **2015:** "*High-level scientific visit for invited researchers*" grant, Campus France, Lyon

PATENTS

5. **M. Focsan**, A. Campu, S. Astilean, T. Murariu, I. Turcu; *Dispozitiv microfluidic plasmonic pe bază de nanoparticule bipiramidice de aur*; Brevet Național O.S.I.M. RO 133447 B1; 2021.

6. A. Campu, M. Moruz, M.Potara, S. Astilean, **M. Focsan;** *Substrat flexibil micro-rugos de polidimetilsiloxan metalizat pentru detecție dual SPR-SERS*; Brevet Național O.S.I.M. RO 137390 A0; 2022.

7. A. Campu, I. Muresan, M.Potara, S. Astilean, S. Cainap, **M. Focsan;** *Nanosenzor plasmonic eficient pe bază de nanobipiramide de aur pentru detecția multimodală a biomarker-ului cardiac troponină I;* Brevet Național O.S.I.M. RO 136059 A0; 2022.

8. **M. Focsan**, A. Campu, A. M. Craciun, S. Astilean; *Dispozitiv microfluidic de detecție fabricat prin integrare de hârtie plasmonică caligrafiată în polidimetilsiloxan*; Brevet Național O.S.I.M. RO 135233 A0; 2021

BOOKS AND BOOKS CHAPTERS

1. **Book:** Edited by V. Chis, **M. Focsan**, M. de la Chapelle, R. Fausto, Journal of Molecular Structure Elsevier, Special Issue *Bridging molecules and nanoparticles the way from optical spectroscopy to cancer therapy*, vol 1254F1, 2022.

2. **Book:** **M. Focsan,** *Laser Microfabrication of Proteins for Biological Applications*, Monica Focsan, Editura Alma Mater, 2013, ISBN 978-606-504-164-6

3. **Book Chapter:** V. Sprincean, A. Chirita, L. Leontie, S. Astilean, **M. Focsan**, A.M. Craciun, A. Paladi, V. Andruh, F. Paladi, Advanced Physical Technologies with the UVS Application in Environment Security, book chapter in Monitoring and Protection of critical infrastructure by unmanned systems, editors P. Daponte and F. Paladi, IOS Press, Amsterdam, 2023, 101- 113, ISBN 978-1-64368-376-8

4. **Book Chapter:** F. Petronella, D. Stoia, Y. Ziai, F. Zaccagnini, V. Scognamiglio, D. Maniu, C. Rinoldi, **M. Focsan**, A. Antonacci, F. Pierini, L. De Sio, Plasmonic-based biosensors for the rapid detection of harmful pathogens, book chapter in Optical Materials and Applications: Volume 1 Novel Optical Materials, Edited By: Iam Choon Khoo, Francesco Simoni and Cesare Umeton, World Scientific Publishing, https://doi.org/10.1142/9789811280603_0006, 2023, 155–194. ISBN 978-981-12-8059-7.

5. **Book Chapter:** M. Potara, A. Campu, S. D. Maniu, **M. Focsan***, I. Botiz, S. Astilean, *Advanced nanostructures for microbial contaminants detection by means of spectroscopic methods*, book chapter in Advanced Nanostructures for Environmental Health, editors L. Baia, Z. Pap, M. Baia and K. Hernadi, Elsevier Inc (2020) 347 - 384, ISBN: 978-0-12-815882-1. ***All authors contributed equally to this work.**

6. **Book Chapter:** M. Potara, **M. Focsan***, A.M. Craciun, I. Botiz and S. Astilean, *Polymer-coated plasmonic nanoparticles for environmental remediation: synthesis, functionalization and properties*, chapter in New Polymer Nanocomposites for Environmental Remediation, eds. C. M. Hussain and M. Ajay, Elsevier, eds. C. M. Hussain and M. Ajay, ***Elsevier***, 2018, Pages 361-387, ISBN:9780128110331, ***All authors contributed equally to this work.**

RESEARCH PROJECTS

• **Director of 12 international/national grants/fellowships – The total funding attracted >930.000 Euro;** Below are listed most important research projects awarded based on competition where the project leader was project coordinator/group lider UBB.

► *Ready-to-use fexible wound dressing with synergistic photothermal and antimicrobial capabilities;* Total amount: ~ 50.500 Euro, Project implementation period: June 2022-June 2024 https://www.nipne.ro/proiecte/pn3/66-proiecte.html; UBB Group Lider; Team Members: prof Simion Astilean, PhD Raluca Borlan, PhD Andreea Campu, Master Student Daria Stoia

► *Portable Plasmonic Nanochip for Fast-On-Site Cardiac Troponin Biomarker Quantitative Diagnostic Test,* Total amount: ~ 123.000 Euro. Project implementation period: Nov 2020 - Oct 2022, https://sites.google.com/view/nanofastdiag; Project Coordinator; Team members: MD Simona Cainap, MD Dan Olinic, MD Calin Homorodean, MD Leontin Lazar, MD Diana Lazar, Prof Simion Astilean, PhD Monica Potara, PhD Ana Maria Craciun, Post Doc. Andreea Campu, Master Student Ilinca Muresan

► *Flexible PDMS-integrated Plasmonic Paper as Versatile Nanochip for Metal Enhanced Fluorescence Biosensing*, Total amount: ~ 90.000 Euro. Project implementation period: Sept 2020 - Aug 2022, https://sites.google.com/view/chip4mef; Project Coordinator; Team members: PhD Ana Maria Craciun, PhD Andreea Campu, PhD Laurentiu Susu.

► *Theranostic microplatforms for multimodal therapy of human ocular pathologies, a new paradigm in biomedical applications,* Total amount: ~ 46.000 Euro. Project implementation period: Nov 2020 - Oct 2022, https://sites.google.com/usamvcluj.ro/microplatther; UBB Group Lider; Team members: Prof Simion Astilean, Post Doc. Andreea Campu, Post Doc. Raluca Borlan, Master Student Daria Stoia

► *Designing new, flexible and low-cost paper-based sensing nanoplatforms through plasmonic calligraphy for performing multiplexed ultrasensitive detection of cancer biomarkers,* Total amount: ~ 100.000 EURO, Period: May 2018-Avril 2020, https://sites.google.com/site/nanoforall2018/home/project-overview; Project Coordinator. Team members: PhD Ana Maria Craciun, PhD Andreea Campu, PhD Laurentiu Susu.

► *Plasmonic-Microfluidic Biosensor for Real Time Detection of Relevant Biomarkers (NanoFlu),* Funding agency: UEFISCDI; Partnerships program, 3 parteners (Babes-Bolyai University, University of Medicine and Pharmacy "Iuliu Hatieganu", Private Company-APRIL), Total amount: ~ 327.000 EURO, Period: July 2013-September 2017, https://sites.google.com/site/nanoflusensorsen/; Project Coordinator, 24 members, including master students, PhD students, Post Doct, Young and Senior Researchers

► *Controlling FRET by surface plasmon resonance in multilayer "core-shell" metallic nanoparticles towards efficient nanoscopic light sources (NanoLight),* Funding agency: UEFISCDI; Human Resources Research Projects for Young Independent Team, Total

amount: ~122.150 EURO, Period: October 2015 - September 2017, https://sites.google.com/site/nanolight2014/; Project Coordinator; Team members: Post Doc Ana Maria Craciun, PhD Sorina Suarasan, Prof Simion Astilean, PhD Cristian Tira, Post Doc Adriana Vulpoi, PhD Andreea Campu

► *Microfluidic platform for integrated plasmonic detection (2plamidet), Funding agency: UEFISCDI;* Mobility International grant, Brancusi Romania-France, Total amount: ~ 5.000 EURO, Period: 2015-2016

- **Key Member** of more than 25 national and international grants (see https://www.nanobiophotonics.ro/projects/national-projects)

INVITED LECTURES

1. **M. Focsan** - *Albumin Nanoparticles: A Versatile Approach for Sensing, Imaging, Treatment, and Targeted Delivery in Medicine* 4th International Conference on Nanomaterials for Health, Energy and the Environment, August 2023, Caloundra, Australia - **Invited Lecture**

2. **M. Focsan** - Innovative Plasmonic Nanobiosensors for Fast Real-Time Biomarker Detection: From Simulated to Real Sample Application, NATO-SPS ARW Biotechnology and human enhancement: present research and future perspectives, 3-5 Octomber 2023, Italy- **Invited Lecture**

3. **M. Focsan** - *Portable Microfluidic Plasmonic Chip for Fast Real-Time Cardiac Troponin I Biomarker Detection*, The 13th International Conference on Metamaterials, Photonic Crystals and Plasmonics (META'2023), special section: SP11., July 2023, Paris, France - **Invited Lecture**

4. **M. Focsan** - *Flexible and Miniaturized Microfluidic Paper-based Plasmonic Chip for Efficient NIR Metal Enhanced Fluorescence Biosensing and Imaging,* International Workshops on Nano and Bio-Photonics" (IWNBP), September 2022, Evian, France - **Invited Lecture**

5. **M. Focsan** - *Calligraphed selective plasmonic sensor on paper platform for multiplex optical detection* Quo vadis, biosensors, a conference in honor of Professor Jean-Louis Marty, July 2020, Bucharest, Romania - **Invited Lecture**

6. **M. Focsan** - *Calligraphed Plasmonic Paper Platforms for Multiplexed Detection* 5th International Workshop on Nano- and Biophotonics (IWNBP 2019), September 2019, St Nectaire, France - **Invited Lecture**

7. **M. Focsan** - *Designed Plasmonic-Based NanoSensors for Integrated Multimodal Biodetection* 6th International Workshop on Advanced, Nano- and Biomaterials and Their Applications and Sixth French-Romanian Topical Meeting on Nano and Biomaterials, May 2019, Cluj-Napoca, Romania - **Invited Lecture**

8. **M. Focsan** - *Gold NanoBipyramids Performing as Highly Sensitive Dual-Modal Optical Immunosensors,* Biosensors as tools for today's challenges, July 2018, Bucharest, Romania - **Invited Lecture**

9. **M. Focsan** - *Self-assembled Plasmonic Nanostructures for Ultrasensitive Detection,* 2nd International Conference on NanoMaterials for health, energy and the environment, Flic en Flac, Mauritius, September 2016 - **Invited Lecture**

10. **M. Focsan** - *Plasmonic Platforms for Ultrasensitive Detection,* IWNBP 2015, 3rd International Workshop on Nano and Bio-Photonics, December 2015, Cabourg, France - **Invited Lecture**

ORGANIZATION/CONTRIBUTION OF SCIENTIFIC MEETINGS

- **2023: Chairman** of the 4th International Conference on NanoMaterials for Health, Energy and the Environment (ICNM2023), 27 – 31 August 2023, Caloundra, Australia.
- **2023: Chairman** of the Advanced Research Workshop (ARW) Biotechnology and Human Enhancement: Present Research and Future Perspectives, San Felice Circeo, Latina, Italy
- **2019: Local organizer** of the Sixth International Workshop on Advanced, Nano- and Biomaterials and their Applications, Cluj Napoca, Romania.
- **2012: Member of the organization committee** of the 31st European Congress on Molecular Spectroscopy (EUCMOS), Cluj Napoca, Romania

EDITORIAL ACTIVITIES

- **2022:** Guest editor for **International Journal of Molecular Sciences**– *"Molecules and Nanoparticles for Cancer Diagnosis and Therapy"*
- **2021:** Special issue guest editor for **Journal of Molecular Structure** – *"Bridging molecules and nanoparticles - the way from optical spectroscopy to cancer therapy", ELSEVIER*

MAJOR COLLABORATIONS

- **Dr. Patrice Baldeck, Prof. Dr. Stephane Parola, Assoc Prof. Frederic Lerouge,** Universitaté Lyon 1, ENS de Lyon, Laboratoire de Chimie, Lyon, France
- **Dr Nadia Djaker,** Universitaté Paris 13, Laboratoire CSPBAT, Equipe Spectroscopies Biomolécules et Milieux Biologiques, Paris, France.
- **Prof. Marc Lamy de la Chapelle,** Le Mans Université, l'Institut des Molécules et Matériaux du Mans, Le Mans, France
- **Prof. Anna Piperno,** University of Messina, Department of Chemical, Biological, Pharmaceutical and Environmental Sciences, Messina, Italy
- **Prof. Luciano de Sio,** Sapienza - University of Rome
- **Dr. Francesca Petronella,** Italian National Research Council, Italy
- **Prof. Filippo Pierini**, Institute of Fundamental Technological Research of Polish Academy of Sciences in Warsaw, Poland.
- **Prof. Sebastian Wachsmann Hogiu,** McGill University Canada.

MEMBERSHIPS OF SCIENTIFIC SOCIETIES

- **2006-2007:** Italian Physics Society
- **2006-present:** Romanian Society of Biophysics

SELECTED RELEVANT ARTICLES CITING FOCSAN's SCIENTIFIC PAPERS

1. **Citing article:** Wagner, M; Seifert, A; Liz-Marzan, LM. *Towards multi-molecular surface-enhanced infrared absorption using metal plasmonics*, Nanoscale Horizons, 7, 11, 1259-1278 (2022) DOI: 10.1039/d2nh00276k, Q1. - **Cited Article:** A. Campu, F. Lerouge, D. Chateau, F. Chaput, P. Baldeck, S. Parola, D. Maniu, A.M. Craciun, A. Vulpoi, S. Simion, M. Focsan. *Gold NanoBipyramids Performing as Highly Sensitive Dual-Modal Optical Immunosensors*, Analytical Chemistry, 90, 8567-8575 (2018), Q1 (rank 7).
2. **Citing article:** Lin, BY; Wang, YL; Yao, YY; Chen, LF; Zeng, YB; Li, L; Lin, ZY; Guo, LH. *Oil-Free Gold Nanobipyramid@Ag Microgels as a Functional SERS Substrate for Direct Detection of Small Molecules in a Complex Sample Matrix*, Analytical Chemistry, 93, 49, 16727-16733 (2021) DOI: 10.1021/acs.analchem.1c04797, Q1. - **Cited Article:** A. Campu, F. Lerouge, D. Chateau, F. Chaput, P. Baldeck, S. Parola, D. Maniu, A.M. Craciun, A. Vulpoi, S. Simion, M. Focsan. *Gold NanoBipyramids Performing as Highly Sensitive Dual-Modal Optical Immunosensors*, Analytical Chemistry, 90, 8567-8575 (2018), Q1 (rank 7).
3. **Citing article:** Zhang, XB; Zhi, H; Zhu, MZ; Wang, FY; Meng, H; Feng, L. *Electrochemical/visual dual-readout aptasensor for Ochratoxin A detection integrated into a miniaturized paper-based analytical device*, Biosensors & Bioelectronics, 180, 113146 (2021) DOI: 10.1016/j.bios.2021.113146, Q1. - **Cited Article:** A. Campu, F. Lerouge, D. Chateau, F. Chaput, P. Baldeck, S. Parola, D. Maniu, A.M. Craciun, A. Vulpoi, S. Simion, M. Focsan. *Gold NanoBipyramids Performing as Highly Sensitive Dual-Modal Optical Immunosensors*, Analytical Chemistry, 90, 8567-8575 (2018), Q1 (rank 7).
4. **Citing article:** Martin-Sanchez, C; Sanchez-Iglesias, A; Barreda-Argueso, JA; Polian, A; Liz-Marzan, LM; Rodriguez, F. *Behavior of Au Nanoparticles under Pressure Observed by In Situ Small-Angle X-ray Scattering*, ACS Nano, 17, 1, 743-751 (2023) DOI: 10.1021/acsnano.2c10643, Q1. - **Cited Article:** Tie, L; Focsan, M; Bosson, J; Tira, C; Campu, A; Vulpoi, A; Astilean, S. *Controlling the end-to-end assembly of gold nanorods*

to enhance the plasmonic response in near infrared, Materials Research Express, 6, 9, 095038 (2019) DOI: 10.1088/2053-1591/ab2eb0.

5. **Citing article:** Carone, A; Mariani, P; Desert, A; Parola, S. *Colloidal Assemblies of Chiral Plasmonic Nanoparticles Induce Tunable Circular Dichroism Response*, Advanced Optical Materials (Early Access - 2023) DOI: 10.1002/adom.202300119, Q1. - **Cited Article:** Tie, L; Focsan, M; Bosson, J; Tira, C; Campu, A; Vulpoi, A; Astilean, S. *Controlling the end-to-end assembly of gold nanorods to enhance the plasmonic response in near infrared*, Materials Research Express, 6, 9, 095038 (2019) DOI: 10.1088/2053-1591/ab2eb0.
6. **Citing article:** Miranda, B; Moretta, R; Dardano, P; Rea, I; Forestiere, C; De Stefano, L. *H-3 (Hydrogel-Based, High-Sensitivity, Hybrid) Plasmonic Transducers for Biomolecular Interactions Monitoring*, Advanced Materials Technologies, 7, 9, 2101425 (2022) DOI: 10.1002/admt.202101425, Q1. - **Cited Article:** Focsan, M; Campu, A; Craciun, AM; Potara, M; Leordean, C; Maniu, D; Astilean, S. *A simple and efficient design to improve the detection of biotin-streptavidin interaction with plasmonic nanobiosensors*, Biosensors & Bioelectronics, 86, 728-735 (2016) DOI: 10.1016/j.bios.2016.07.054.
7. **Citing article:** Makvandi, P; Zarepour, A; Zheng, XQ; Agarwal, T; Ghomi, M; Sartorius, R; Zare, EN; Zarrabi, A; Wu, AM; Maiti, TK; Smith, BR; Varma, RS; Tay, FR; Mattoli, V. *Non-spherical nanostructures in nanomedicine: From noble metal nanorods to transition metal dichalcogenide nanosheets*, Applied Materials Today, 24, 101107 (2021) DOI: 10.1016/j.apmt.2021.101107, Q1. - **Cited Article:** A. Campu, L. Susu, F. Orzan, D. Maniu, A.M. Craciun, A. Vulpoi, L. Roiban, M. Focsan, S. Astilean. *Multimodal Biosensing on Paper-Based Platform Fabricated by Plasmonic Calligraphy Using Gold Nanobipyramids Ink*, Frontiers in Chemistry, 7, 55 (2019), Q2 DOI: 10.3389/fchem.2019.00055.
8. **Citing article:** Skwierczynska, M; Wozny, P; Runowski, M; Kulpinski, P; Lis, S. *Optically active plasmonic cellulose fibers based on Au nanorods for SERS applications*, Carbohydrate Polymers, 279, 119010 (2022) DOI: 10.1016/j.carbpol.2021.119010, Q1. - **Cited Article:** Susu, L; Campu, A; Craciun, AM; Vulpoi, A; Astilean, S; Focsan, M. *Designing Efficient Low-Cost Paper-Based Sensing Plasmonic Nanoplatforms*, Sensors, 18, 9, 3035 (2018), Q2 DOI: 10.3390/s18093035.

9. **Citing article:** Gao, PF; Lei, G; Huang, CZ. *Dark-Field Microscopy: Recent Advances in Accurate Analysis and Emerging Applications*, Analytical Chemistry, 93, 11, 4707-4726 (2021) DOI: 10.1021/acs.analchem.0c04390, Q1. - **Cited Article:** Susu, L; Campu, A; Craciun, AM; Vulpoi, A; Astilean, S; Focsan, M. *Designing Efficient Low-Cost Paper-Based Sensing Plasmonic Nanoplatforms*, Sensors, 18, 9, 3035 (2018), Q2 DOI: 10.3390/s18093035.
10. **Citing article:** Lemcoff, N; Nechmad, NB; Eivgi, O; Yehezkel, E; Shelonchik, O; Phatake, RS; Yesodi, D; Vaisman, A; Biswas, A; Lemcoff, NG; Weizmann, Y. *Plasmonic visible-near infrared photothermal activation of olefin metathesis enabling photoresponsive materials*, Nature Chemistry, 15, 4, 475 (2023) DOI: 10.1038/s41557-022-01124-7, Q1. - **Cited Article:** Campu, A; Craciun, AM; Focsan, M; Astilean, S. *Assessment of the photothermal conversion efficiencies of tunable gold bipyramids under irradiation by two laser lines in a NIR biological window*, Nanotechnology, 30, 40, 405701 (2019), Q2 DOI: 10.1088/1361-6528/ab2d90.