



Ioana Cărdan (Marica)

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Website: <https://plasticramandatabase.phys.ubbcluj.ro/>

Work: INCDTIM, 67-103 Donath, Cluj-Napoca (Romania)

WORK EXPERIENCE

Scientific Research Assistant (ACS)

National Institute for Research and Development of Isotopic and Molecular Technologies [02/03/2021 – Current]

City: Cluj-Napoca | Country: Romania

Department: Isotopic and Molecular Technologies

Research Team: Laser Induced Processes

Tutor for undergraduate students

Babeş-Bolyai University [16/11/2020 – 30/06/2021]

City: Cluj-Napoca | Country: Romania

ROSE Project, Faculty of Physics, Babeş-Bolyai University

EDUCATION AND TRAINING

PhD student

Doctoral School of Physics, Babeş-Bolyai University [01/10/2022 – Current]

Thesis: Detection of nanoplastics by using ultrasensitive Raman-based methods, Supervisor: Prof.dr.habil. Simona C. Pînzaru

MSc in Physics

Faculty of Physics, Babeş-Bolyai University [28/09/2020 – 03/07/2022]

Field(s) of study: Biophysics and Medical Physics | **Thesis:** A Raman spectral database of naturally aged plastics: a proof-of-concept study for plastic waste sorting, Supervisor: Prof.dr.habil. Simona C. Pînzaru

Engineer

Faculty of Physics, Babeş-Bolyai University [10/2016 – 06/2020]

Field(s) of study: Technological Physics | **Thesis:** Study of Raman signal variability of plastic waste for an efficient sorting technique based on Raman spectroscopy, Supervisor: Prof.dr.habil. Simona C. Pînzaru

SCIENTIFIC INTEREST

- Surface-enhanced Raman Scattering (SERS) studies on nanoplastics detection and their tracing in the environment.
- Micro- and macroplastics detection and sorting using micro-Raman spectroscopy technique.
- Fabrication of nanostructured plasmonic substrates by means of colloidal lithography and their optimization for improved SERS substrates

RESEARCH STAGES

[05/03/2023 – 02/05/2023]

Department of Chemical Sciences, University of Padova, Padova, Italy

Short Term Scientific Mission (STSM) grant supported by COST Action CA20101, PRIORITY

Project: Surface-enhanced Raman Spectroscopy of nanoplastics on nanostructured plasmonic substrates

(dr. R. Signorini and dr. R. Pilot)

RESEARCH GRANTS AND SCHOLARSHIPS

[11/2024 – 10/2025]

Research Scholarship for Scientific Contributions

Funded by Babeş-Bolyai University within *Premiere PROGRESS* institutional project, project number PN-IV-P8-8.1-PRE-HE-ORG-2023-0118

Cluj-Napoca, Romania

[01/01/2023 – 30/06/2023]

Doctoral Advanced Fellowship

Funded by Babeş-Bolyai University – Project no. PFE-550-UBB

Project: From macro and micro to nanoplastics identification and monitoring in environmental biota: strategies to enhance micro-Raman signal from biological samples exposed to nanoplastics

Cluj-Napoca, Romania

[2021 – 2022]

Research scholarship

Funded by the World Federation of Scientists

Project: Sorting environmental plastics for recycling using Raman spectroscopy with portable instruments

Cluj-Napoca, Romania

[28/09/2020 – 30/09/2021]

Research scholarship

Funded by Babeş-Bolyai University

Project: Study of the natural plastic degradation to streamline a sorting technique based on Raman technology in order to recycle and apply data according to the FAIR principle

Cluj-Napoca, Romania

SCIENTIFIC OUTPUT

Publications: 10

Web of Science profile: <https://www.webofscience.com/wos/author/record/KCJ-8441-2024>

ORCID: <https://orcid.org/0000-0001-9455-9363>

Citations: 68, h-index=4 (WoS)

CONFERENCES AND SEMINARS

[27/07/2024 – 02/08/2024] Rome, Italy

28th International Conference on Raman Spectroscopy – ICORS 2024

Oral presentation: [I. Marica](#), I. Nesterovschi, C. Farcău, S. Cîntă Pînzaru. "Blue, naturally degraded nanoplastics abundance and their detection via two Raman-based approaches"

[19/09/2023 – 22/09/2023] Cluj-Napoca, Romania

International Conference on Processes in Isotopes and Molecules (PIM 2023),

Poster: [I. Marica](#), A M M Gherman, A Colnita, V Zani, R Signorini, R Pilot, and C Farcau, "Plasmonic nanostructured substrates fabricated by colloidal lithography for nanoplastics SERS detection"

[27/08/2023 – 01/09/2023] Krakow, Poland

International Conference on Advanced Vibrational Spectroscopy (ICAVS12)

Poster: [I. Marica](#), V. Zani, R. Signorini, R. Pilot, S. Cîntă Pinzaru, C. Farcău, "Optical properties and SERS analysis of quasi-3D plasmonic nanostructures fabricated by colloidal lithography"

[10/07/2023 – 14/07/2023] Athens, Greece

14th International Conference on Surfaces, Coatings and Nanostructured Materials (NANOSMAT)

Poster: [I. Marica](#), M. Stefan, S. Boca, A. Falamaş, C. Fracau, "Evaporation induced self-assembly of ZnO and TiO₂ colloidal nanoparticles into highly uniform films for spectroscopic applications"

[08/09/2022 – 15/09/2022] Dubrovnik, Croatia

International Conference on Physics of Advanced Materials (ICPAM-14)

Poster: [I. Marica](#), I Nesterovschi and S Cîntă Pînzaru "A sustainable plastic waste initiative from macro- to microplastics based on Raman spectroscopy technique"

[22/09/2021 – 24/09/2022] Cluj-Napoca, Romania

International Conference "Processes in Isotopes and Molecules" (PIM 2021)

Poster: [I. Marica](#), I. Nesterovschi, M. Aluaş, S. Cîntă Pînzaru, "Environmental degradation and pigments influence on plastics waste determined by Raman Spectroscopy: sorting algorithm and plastic Raman database".

[23/09/2021 – 24/09/2021] Cluj-Napoca, Romania

International Conference "Life sciences for sustainable development"

Poster: [I. Marica](#), M. Aluaş and S. Cîntă Pînzaru, "Sorting of mixed plastic waste using the Raman spectroscopy technique as a sustainable solution".

[21/11/2019 – 23/11/2020] Iaşi, Romania

International Conference on E-Health and Bioengineering (EHB)

Oral presentation: [I. Marica](#), M. Aluaş and S. C. Pînzaru, "The Management and Stewardship of Medical Plastic Waste using Raman Spectroscopy to Sustain Circular Economy.

WORKSHOPS AND COURSES

[08/09/2024 – 13/09/2024]

Microplastics workshop for early career researchers: Best practices and expert insights

Idstein, Germany

Oral presentation and poster: [I. Marica](#), I. Nesterovschi, C. Farcău, S. Cîntă Pînzaru

The abundance of blue micro- and nanoplastics in the environment and their detection via micro-Raman and SERS methods

[28/07/2024 – 02/08/2024]

CHARISMA Raman School

Rome, Italy

[06/06/2022 – 09/06/2022]

Ciamician Photochemistry School

Bologna, Italy

Organized by the University of Bologna, Italy

[22/05/2022 – 25/05/2022]

International Workshop "Women in Photonics"

Jena, Germany

Oral presentation and Poster: [I. Marica](#), M. Aluaş and S. Cîntă Pînzaru "Prospects to up-scale Raman technology for pigmented and environmentally degraded plastic waste: sorting algorithm and plastic Raman database".

[08/11/2021 – 11/11/2021]

18th International Course on "Principles and Applications of Time-Resolved Fluorescence Spectroscopy"

Virtual Meeting

The course was organized by PicoQuant and held in cooperation with Prof. J.R. Lakowicz.

[05/07/2021 – 09/07/2021]

EUGLOH summer school - Lasers in Medicine and Life Sciences (LAMELIS)

Virtual Meeting

Organised by the University of Szeged | Hungary

[24/06/2021 – 24/06/2021]

International Workshop "Blue bioeconomy approach to wasted marine biomass: innovative ideas, techniques and translational sciences"

RDI Institute of Applied Natural Sciences – Babeş-Bolyai University, Cluj-Napoca, Romania

Presented Paper: [I. Marica](#) & I. Nesterovschi, "From macro- to microplastics identification and sorting using Raman technology"

Event organized by RDI Laboratory of applied Raman spectroscopy and services towards the society, within the RDI Institute of Applied Natural Sciences – Babeş-Bolyai University, and the "Ioan Ursu" Institute of the Faculty of Physics and with participation of the company METROHM Romania & BWTEK.

TEACHING ACTIVITIES

Spectroscopy and Lasers laboratory

Faculty of Physics, Babeş-Bolyai University, 1st semester of the last three academic years (2022-2025) - bachelor level

Biomedical applications of IR and Raman Spectroscopy laboratory

Faculty of Physics, Babeş-Bolyai University, 2nd semester of 2023-2024 - master level

HONOURS AND AWARDS

[14/11/2024]

Danubius Young Scientist Award 2024

The Austrian Federal Ministry of Education, Science and Research in cooperation with the Institute for the Danube Region and Central Europe

[22/09/2023] INCDTIM, International Conference on Processes in Isotopes and Molecules (PIM 2023)

The Best Poster Award

The awarded poster: "Plasmonic nanostructured substrates fabricated by colloidal lithography for nanoplastics SERS detection"

[15/09/2022] University of Dubrovnik, International Conference on Physics of Advanced Materials (ICPAM-14)

The Best Poster Presentation Award

The awarded paper "A sustainable plastic waste initiative from macro- to microplastics based on Raman spectroscopy technique"

[23/06/2021] Student council from Babeş-Bolyai University

Excellentia Award

PUBLIC ENGAGEMENT/OUTREACH

[2022]

Romanian TV report "Romania la PET" within "Romania, Te iubesc" TV show

<https://www.youtube.com/watch?v=DYb3MtMRwMk>

12/02/2025



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