IABEP2025
OCTOBER 13-15, BELGRADE, SERBIA

The 3rd Conference of the International Association for Biomonitoring of Environmental Pollution

October 13th to 15th 2025, Belgrade, Serbia

Book of Abstracts

Editors

Nenad Zarić - Faculty of Biology, University of Belgrade, Serbia
Mira Aničić Urošević- Institute of Physics Belgrade, University of Belgrade, Serbia

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IABEP
INTERNATIONAL ASSOCIATION FOR BIOMONITORING OF ENVIRONMENTAL POLLUTION

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Preface

After the successful launch of the International Association for Biomonitoring of Environmental Pollution (IABEP) in Trieste (October 2023) and the 2nd conference in Lisbon (November 2024), the 3rd IABEP Conference (IABEP 2025) was held in Belgrade, Serbia, from 13th to 15th October 2025.

The IABEP conference gathered scientists, students, policymakers, and professionals in the field of biomonitoring of environmental pollution across terrestrial, freshwater, and marine habitats. It featured insightful presentations, engaging discussions, and networking opportunities focused on the latest advancements, challenges, and solutions in biomonitoring. For the first time, the conference also embraced topics related to mitigation and removal of pollutants from the environment through bioremediation and phytoremediation.

The main topics of IABEP 2025 included:

- Biomonitoring techniques to assess spatial and temporal patterns of pollution and its impact on biodiversity, pollutant accumulation, molecular markers, and magnetic analysis
- Novel biomonitoring methodologies
- Emerging pollutants and their toxicity
- Advances in bioindicators and biomarkers
- Bioremediation and phytoremediation approaches
- Integration of biomonitoring data into risk assessment and policy-making

The local organizer of IABEP 2025 was the **Institute of Physics Belgrade**, a National Institute of the Republic of Serbia, University of Belgrade (IPB), with support from the **Faculty of Biology** and the **Faculty of Chemistry**, University of Belgrade.

The scientific program of IABEP2025 included plenary, invited, and honorary lectures, as well as oral presentations and poster sessions. Special attention was given to promoting young researchers through short talks and awards.

The first conference day was dedicated to mosses and lichens as biomonitors of air pollution and began with a plenary lecture by Prof. Marko Sabovljević, who provided a comprehensive overview of *"Bryophytes as biomonitors – from laboratory research to field application."* It was followed by remarkable examples of long-term biomonitoring programs, including *"Past, present and future of the UNECE ICP Vegetation"* by Prof. Marina Frontasyeva and *"50 years of moss biomonitoring in Sweden"* by Dr. Marta Segura Roux. In addition, Prof. Linda Geiser emphasized *"Mapping air quality and climate vulnerabilities of epiphytic macrolichens across North America."* The afternoon session concluded with a critical evaluation of lichen and moss biomonitoring data presented by Prof. Stefano Loppi.

The second conference day focused on the potential of vascular plants as biomonitors of inorganic and organic pollutants, with special emphasis on microplastics research. The day began with an inspiring plenary lecture by Prof. Roeland Samson on *"One Health concept, citizen science approach, and bio(magnetic)monitoring of vegetation."* The afternoon session highlighted *"Phytoremediation perspectives: metal hyperaccumulation in Noccaea caerulescens"* presented by Prof. Mark Aarts.

The third day explored animal biomonitoring, particularly of PFAS (the "forever chemicals") in marine and terrestrial environments. A memorable plenary lecture by Prof. Joerg Feldmann

opened the session, followed by *"Legacy and emerging pollutants monitored by birds"* presented by Prof. Silvia Lacorte. Other contributions showcased the use of algae, mollusks, and fish as biomonitors of emerging pollutants, and bioavailability of contaminants from food of animal origin presented by Dr. habil. Stefan Jurjanz.

The IABEP Awards were presented to recognize outstanding scientific achievements and to encourage early-career researchers. The Best Oral Presentation Awards were granted to Tomica Mišljenović ("*Decoding survival: A synthesis of studies on Viola species from Allchar*") and Tijana Milićević ("*The human milk as a biomonitor of potentially toxic elements – bioaccessibility and infant health risk assessment*") while the Best Short-talk Awards were granted to Milica Popović *("Application of nonlinear optical imaging and Nile Red staining in microplastic analysis"*) and Mirko Legnaro Diamanti (*"Biomonitoring of airborne elements and microplastics: a comparison of terricolous and epiphytic lichens"*).

This *Book of Abstracts* represents a concise summary of the scientific contributions presented at IABEP 2025 highlighting current advances, challenges, and perspectives in biomonitoring of environmental pollution. We hope it inspires future collaborations and innovations in this vital field.

Dr. Mira Aničić Urošević
Chair of the 3rd IABEP Conference

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Contents

An efficient, cost-effective, and environmentally friendly protocol for extracting microplastics from soil samples

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As land plastic pollution has accumulated over recent decades, small fragments of its degradation, microplastics (MPs) [1], have become an increasingly urgent problem in soil environments. Monitoring and reporting soil MPs will be essential in the future, but existing literature describes many protocols, none of which appear to be efficient for this purpose. The initial step in MP analysis from soils is extracting MP particles, which is particularly challenging due to the substrate [2]. Challenges include aggregate formation and the presence of other organic particles of similar size, complicating the development of efficient and reliable extraction protocols. Density separation methods are commonly used, and finding solutions that are effective, affordable, and environmentally friendly is crucial, with data comparability being vital for advancing knowledge on this topic. Here, we introduce an environmentally friendly protocol based on density separation using a sucrose solution. Its effectiveness for extracting MPs from soil was tested and validated. Validation results showed that this method efficiently recovered polyethylene (PE) for all tested MP sizes (>32 μm) and PVC for particles >500 μm, with high recovery rates. Extraction of 125–500 μm PVC is justified, despite a lower recovery rate of 64.04 ± 1.73%, because sucrose solution is practically free and environmentally safe, unlike previously used more expensive and toxic media. Validation results suggest that the proposed protocol has strong potential for extracting MPs from challenging soil samples. This method can be effectively used in any soil science laboratory, including those responsible for monitoring.

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