



ASSOCIATION OF CHEMISTRY AND THE ENVIRONMENT

Newsletter 2023

edited by Branimir Jovančičević

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1) Nuno Ratola, new elected ACE president:
ACE activities in the future

Dear ACE Members and Friends,

The challenges presented by the CoViD-19 pandemic shook the everyday structure of our lives and naturally presented completely unknown obstacles to every organization. But as it often happens, these hurdles can become opportunities to change and evolve. Luckily, the Association of Chemistry and the Environment was no exception. Forced to confinement, the

search for alternative ways to disseminate science led to the engagement of the younger researchers in its activities. As a result, the “CHEM2CHANGE - Environmental Chemistry Towards Global Change” online Conference in 12-16 March 2022 was an astonishing success, prompting the ACE Board to create a branch of very talented Early-Career Researchers to take an active part in the future decisions and events of the Association. With this action the future becomes the present and the horizons of our actions will expand. Their participation was already relevant in the EMEC22 Conference in Ljubljana last December, with an ACE Early-Career Researcher's network event. And it is expected to continue in the events planned for this and the following years.

Now that apparently the pandemic restrictions are diluted into a new normality, but the troubled times are still upon us derived from the conflict in the Ukraine, ACE will try to boost in-person actions, while taking advantage of the online opportunities whenever needed. This year, our main event – the EMEC meeting – will take place from 3 to 6 of December in the lovely city of Budva for its 23rd edition (EMEC23), hosted by our colleagues of the University of Montenegro. And other actions are under consideration, as well as the support of other events such as the PETROMASS 2022 Conference last October in Crete. We will obviously continue to support the participation of the younger researchers, not only through our EMEC Scholaships, but also securing external sponsors for oral and poster presentation prizes in our events. Most of the times, the difficulty is the choice, given the high number of outstanding studies we come upon.

The goal of the Association is to continue disseminating environmental chemistry science, to an increasing array of researchers and stakeholders. And we look forward to the input of all members for ideas to accomplish it, either by hosting activities or suggesting new directions. I urge all of you to get involved and participate in the present and in the futures of the ACE.

2) Mojca Bavcon Kralj:
Ljubljana 2022 – EMEC22 that lies behind us

Dear EMEC22 participants, dear colleagues, and dear friends!

This year the EMEC22 conference was in Ljubljana, Slovenia. It has continued the tradition of annual meetings of Association of Chemistry and the Environment, providing a forum for exchange of ideas on recent advances in research and development in environmental chemistry and technology. This year, the conference has up-scaled in session topics, from solid matrices, water, atmosphere and sustainable development to one health. The last session topic empowers the community health care, which is an important contribution of science applicability.

EMEC22 finally caught its event number with the actual year, and it was held in a unique conference venue: the Grand Hotel Union, organized by six awesome females ☺.



EMEC22 Organising Committee: from left Lara Čižmek, Urška Šunta, Franja Prosenc, Polonca Trebše, Mojca Bavcon Kralj, Nevena Antić.

The venue has an interesting history, as EMEC conferences have. First, going back in the hotel's past. It was the first modern hotel not only in Ljubljana, but in the whole southeast Europe, built between 1903 and 1905 in a fine example of the Art Nouveau style. At that time, it was nominated as a piece of history, art and science together meant as a milestone for the future. Many things have changed since then, the population has grown five times. Months ago, the world's population has hit eight billion. We are wondering what will remain firm and strong for the next more than a hundred years as a point of inspiration?

The answer could be found in searching the right way, not the easiest. Science is as a passion of research, more than this, it is a life decision. Strength of struggling for the progress of environment by changing community. Art of beauty and art of cooperation, even from the opposite point of view. These are the steps from EMEC1 to EMEC22 conferences. Since the beginnings, the EMEC conferences brought together a small community of powerful scientific friends, working, evolving together and going beyond borders and times. EMEC22 caught in its sail a strong new wind, the ACE early-career researcher, who have connected and built a strong network. They have captured the spirit of EMEC, and they are designing it to stand as a milestone for our common future.

The previous year 2022 was a difficult one. The whole community right now must swim between stones and traps of post-pandemics times, the war in Ukraine, the energy and

economic crisis, multimedia wars and so on, and on. We are learning year by year how to adopt and cope with challenging future. The inspiration makes miracles. In a way, this is what we are doing pretty well during EMEC conferences, and EMEC22 was not an exception.

Dear friends, inspire each other, be an artist of science, enjoy EMEC23 in Montenegro! See you there, all of you!



Participants at EMEC22, Ljubljana, December 5th-8th 2023.

3) Franja Prosenc:
Early-career researchers at EMEC22

In EMEC22, the early-career network of ACE, »Chem2Change«, hosted the first in-person event for the early-career participants of EMEC22. The organising committee for the event consisted of researchers from the University of Belgrade (SRB), the University of Ljubljana (SI), the University of Pardubice (CZ), the Environmental Research Institute of the University of Highlands and Islands (UK), and the University of Leeds (UK). On the evening of the 6th of December 2022, after the last section of the day at EMEC22, we held a workshop on early-career development with three panel speakers, Dr Dušan Materić (Helmholtz Centre for Environmental Research), Dr Lydia Niemi and Dr Szabolc Pap (Environmental Research Institute, University of Highlands and Islands), who told their story of career development, the importance of mobility and stakeholder engagement. The panel was led by Dr Franja Prosenc (University of Ljubljana & University of Leeds), followed by a

discussion between the panellists and the participants of the workshop. After this, the participants engaged in an ice-breaker activity, where they drew their research on a piece of paper, while others in the group had to guess what their research is about. The artwork was then put together to create a collage, which was displayed on the wall in the conference venue. The workshop and the ice-breaker activity were followed by a dinner and social at the brewery and pub »Pivnica Union«, where participants got to hang out in an informal setting.

The event was well-received and attracted 45 participants from 13 different countries. We received very positive feedback from the participants, which made us excited to prepare new events for early-career researchers in the future!

We are hoping to make this in-person event for early career researchers a recurring thing at every EMEC. Our next event will be a free online workshop for the early career researcher at the end of May, so please invite your early career colleagues to join! More details will follow soon.

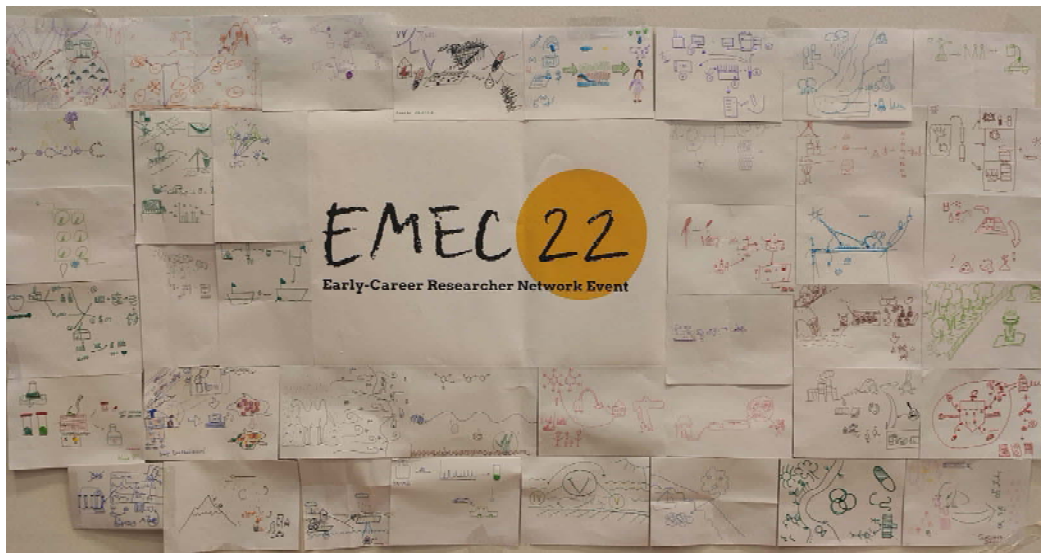
We're very grateful to our sponsors, the Scottish Alliance for Geoscience, Environment and Society – SAGES, and Analysis Adria d.o.o., to be able to make this event happen for all the wonderful early career researchers attending EMEC22.



The organising committee of EMEC22 Early career researchers' workshop and social (from left to right): Slađana Savić, Urška Šunta, Frederika Mišikova, Lydia Niemi, Gordana Gajica, Szabolc Pap, Franja Prosenc.



A panel discussion with guest speakers on early-career development.



Participants of the EMEC22 Early career researchers' workshop with their artwork showcasing their research projects (top). A collage of participants' drawings of the research projects they produced in their groups during the icebreaker session (bottom).

4) Željko Jaćimović:
Budva- Montenegro 2023 – EMEC23 is in front of us

The 23rd European Meeting on Environmental Chemistry (EMEC23) will be held on 3rd - 6th December, 2023 in Budva, Montenegro.



Budva is one of the oldest urban centers in the Adriatic - it is more than 2.500 years old. When for the first time you visit the old Budva's town maybe you will think that you are in a labyrinth, because of the braided streets, squares, bulwarks and towers from the late middle century.

EMEC23 will be held in Avala Resort & Villas (<https://www.avalaresort.com/>), the hotel is located just a few steps from the old town and the port, on the beach, so it is suitable for both work and walking and enjoying the sun that Budva has even in December.



It takes only two hours to get to Montenegro from most of the European capitals. There are two international airports – in Podgorica (65km away from Budva) and Tivat (20 km from Budva). More informations about travel details can find on site <https://emec23.com/travel/> .

This conference is organized by the Chemical Society of Montenegro, on behalf of the Association of Chemistry and the Environment (ACE). The Chemical Society of Montenegro has a small number of members, everyone will do their best to make the participants of the conference feel not as guests, but as friends.

EMEC23 continues the tradition of previous annual meetings providing a forum for the exchange of ideas on recent advances in research and development in environmental chemistry and technology for people from industry, research and academia concurrently.

Environmental Chemistry involves the study of the effects that chemicals have on the air, water and soil and how they impact the environment and human health.

Therefore the scientific program of conference is arranged in 5 thematic sessions:



SOLID
MATRICES



WATER



ATMOSPHERE



SUSTAINABLE
DEVELOPMENT



ONE HEALTH

Early-bird registrations will be open from 15th of March until the 20th of October 2023. The web site <https://emec23.com/> will shortly be populated with information on the scientific and social aspects of the conference. Participants can get answers to all questions and doubts by email: info@emec23.com.

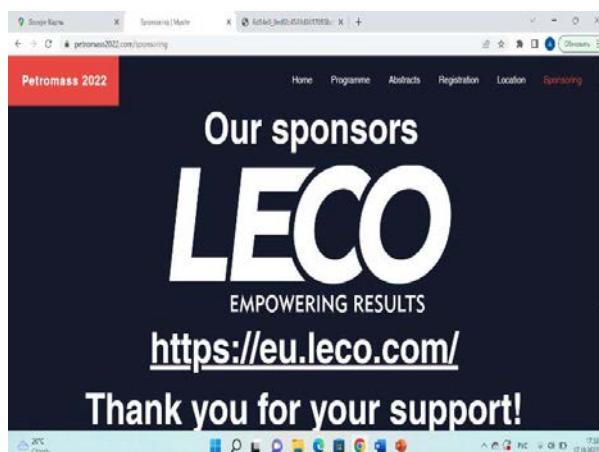
5) Alebert Lebedev:
ACE board members at the Petromass 2022 conference in Crete

XII International Mass Spectrometry Conference on Petrochemistry, Environmental and Food Chemistry Petromass 2022 took place October 16-23 2022 in Crete, Greece under the auspices of ACE, RMSO, and MASSECO doo. The meeting was held in an all-inclusive hotel Agapi Beach Resort. The weather was fine for mid October, although the wind was a bit strong. Not everybody dared swimming.

Due to four shifts in the Conference time (from April 2020 to October 2022) due to Covid 19 there were certain problems with participation. For example, certain group of the scientists from the USA could not come due to the lecturing timetable. Nevertheless, the participants were able to listen 34 oral presentations and 3 posters.



Photos of the hotel and the surroundings where the conference was held.



LECO Europe was sponsoring the event and significantly helped to its realization.



Participants are coming. The first group of the colleagues.

It is also worth mentioning the administration of the hotel. They kept the prices which had been fixed for the April 2020, i.e. 2,5 years earlier. The lectures were dealing with the most various aspects of environmental, food, and petroleum chemistry.

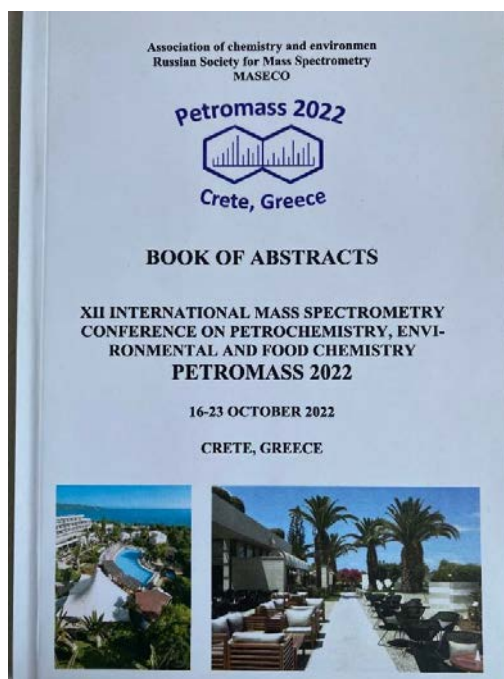
There were four plenary lectures given by:

- 1) R.Zubarev (Karolinska Institutet, Sweden) - Proteomics-compatible Fourier Transform Isotopic Ratio Mass Spectrometry of Polypeptides.
- 2) J. Schwarzbauer (Aachen University, Germany) - Critical aspects on offline pyrolysis-based GC/MS quantitation of microplastic in environmental samples.
- 3) E.Stashenko (Bucaramanga University, Colombia) - A wonderful adventure of insects with plants in a tropical garden.

- 4) N. Ratola (Porto University, Portugal) - Greener approaches for the analysis of microcontaminants in several environmental matrices by GC-MS. It should be specially mentioned that over 50% of the lectures were presented by students.



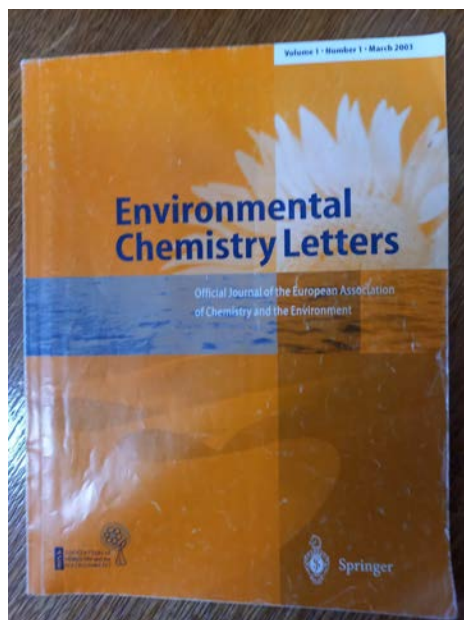
One of the Conference diners. There were three of them.



The whole book of abstracts may be found at the website of MASSECO doo, Slovenia <https://masseco.org>.

6) Jan Schwarzbauer:
Success of Environmental Chemistry Letters (IF 13.615)

The *European Association of Chemistry and the Environment ACE* is from the beginning closely related to its official journal the *Environmental Chemistry Letters ECL*. Just three years after the foundation of ACE, the board members started to establish ECL by a very fruitful collaboration with Springer publisher. The first issue was published in March 2003, hence we are now celebrating roughly our 20th anniversary. Besides the Editors-in-chief Eric Lichtfouse, Didier Robert and Jan Schwarzbauer, also nearly all Assoc Editors of the starting time had been on the one hand ACE members and on the other hand are still in charge, now for 20 years. The initial idea was to publish paper located at the interfaces of geology, chemistry, physics and biology. And obviously that worked, the successful development of ECL can be traced either by the currently increased number of issues (we started with four issues per year but have now 6 issues per year with over 100 paper) but also by the rapid increase of the Impact Factor IF from 2015 (2.19) to 2022 (13.62). Here ECL is now in the most upper group of environmental journals.



Frontpage of the first issue of ECL.

Nevertheless, the successful work is certainly also the result of many factors. In particular the efficient cooperation of the publisher, the Editors-in-Chief, the Assoc Editors and the active support of many ACE members need to be highlighted here. Now there are nearly 50 Assoc. Editor from all over the world (UK, Slovenia, China, India, USA, Singapore, Australia,

Spain, South Africa, Russia, Iran, France, Vietnam, Malaysia, South Korea, Italy and Serbia) in charge for ECL.

And they are looking forward to high-quality manuscripts especially from the ACE community, hence I invite you cordially to use ECL as your preferred publication medium!

7) Lydia Niemi

*Postdoctoral Research Associate and One Health Breakthrough Partnership Coordinator,
Environmental Research Institute, University of the Highlands and Islands, Thurso KW14
7JD, Scotland, UK; lydia.niemi@uhi.ac.uk.*

- awarded oral presentation at EMEC 22:

**Innovative data Visualisation tool to aid addressing
pharmaceutical pollution in the scottish water environment**

The global challenges of climate change, biodiversity loss and pollution are complex ones requiring trans-disciplinary collaboration and action across a range of spatial and temporal scales (from global to local, and short to long-term). The concept of “One Health” recognises that the health of people, animals, plants, and the environment are inextricably linked and that we cannot and should not consider one without the other.

The presence of pharmaceutical residues in the aquatic environment is a key issue at the One Health interface, and is recognised internationally as an important public health and environmental issue. Due to extensive prescribing and use, pharmaceuticals have been widely detected in effluent-receiving surface water and aquatic environments following incomplete removal within wastewater treatment plants. The environmental fate and risks are not fully characterised, but many compounds are of ecotoxicological and regulatory concern due to the effects in non-target organisms at trace, environmentally relevant concentrations.

To address this issue in Scotland, five organisations representing the environment, water, and healthcare sectors have formed the [One Health Breakthrough Partnership](#) (OHBP, Figure 1). The OHBP brings together key regional and national stakeholders committed to reducing pharmaceutical pollution in the environment through innovation, cross-sector engagement, and knowledge exchange. It is supported by the Scottish Government, due to the strategic alignment with Scotland’s environment, climate, and healthcare policies that seek to promote Scotland as a world leader in sustainability.



Fig. 1. Infographic of the One Health Breakthrough Partnership, with steering group organisations, vision, mission and website link.

Recently the OHBP worked with researchers to perform a baseline assessment of pharmaceuticals in Scotland's water environment. The environmental dataset, containing >48000 datapoints, representing 60 pharmaceuticals in 11 distinct environmental matrices, was first interrogated to explore spatial trends and environmental risk. Spatial analysis revealed relationships with population demographics, with significant monitoring gaps in rural areas of Scotland, and most monitoring targeting "high risk" locations e.g., directly downstream of WWTPs. Preliminary risk assessment, based on a holistic consideration of risk quotients, detection frequencies and prescription volumes, identified several substances with higher ecotoxicological risk in inland surface waters, and risk of driving antimicrobial resistance (based on minimum inhibitory concentrations).

The database has been collated into an innovative [data visualisation tool](#) developed by the Scottish Environment Protection Agency (SEPA) with the OHBP (Figure 3). This tool is the first open access interactive data source to combine national environmental data and prescribing data on pharmaceuticals. Environmental data has been matched to standardised quantities of drugs prescribed, by health board, GP practice and drainage operational area, enabling users to view both datasets over a range of spatial scales.

The OHBP is interrogating this tool with researchers, health professionals and environmental scientists to develop a better understanding of the link between medicine use and pharmaceutical pollution, and the impact pharmaceuticals may have on Scotland's water environment. This will include assessing environmental spatiotemporal trends and prescription trends, and modelling to predict future environmental risk related to population demographics, prescription frequency and changing weather patterns. The new [UKRI Medical Research Council funded project](#) will interrogate prescription trends to explore possible relationships between prescribing and environmental occurrence of pharmaceuticals,

and develop a framework to incorporate environmental risk and hazard data into the prescribing process.

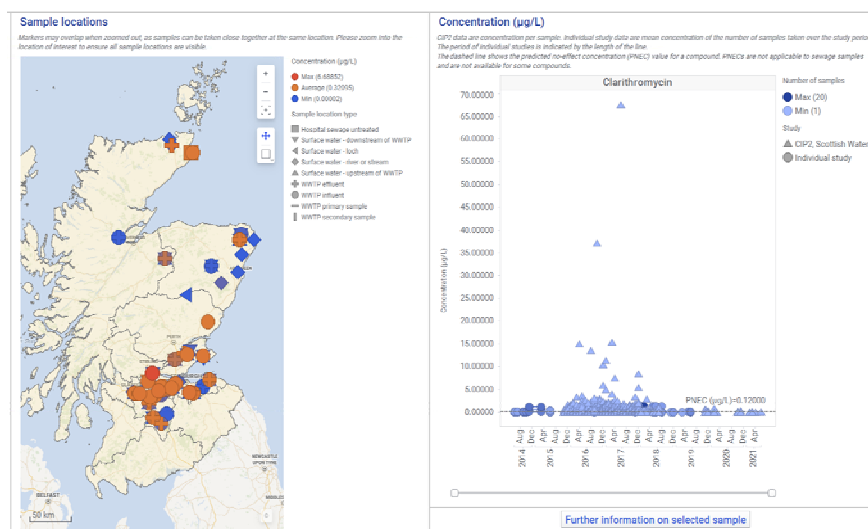


Fig. 2. Map from the Data Visualisation Tool, showing sample locations of the antibiotic clarithromycin detected in the water environment in Scotland, and corresponding table with concentration levels (µg/L) and indication of the Predicted No-Effect Concentration (PNEC).

The visualisation tool will continue to be developed and updated as data becomes available. It is envisioned to be used by stakeholders to inform the development of substance specific and location specific interventions to reduce potential risks to environmental and human health.

8) Nuno Ratola:
ACE and young researchers - scholars at EMEC22 in Ljubljana

The EMEC22 in Ljubljana, organized in record time by our incredible hosts, represented a new chapter towards normality after the travel restrictions that limited any form of human contact and, consequently, of broad in-person meetings. So, it was no surprise that a considerable number of applications responded to the call of the Association of Chemistry and the Environment for scholarships for the participation of M.Sc. and Ph.D. students and early career researchers at the EMEC22. The dissemination of the call was similar to previous years: on the EMEC22 and ACE web pages and also by e-mail from the event's Organization. This award covered the conference fee and travel and accommodation expenses up to €400. Given the quality of the candidates from all over Europe, it was decided to support the participation of 4 young scientists instead of the normal 3, in line with the financial status of the Association.

The applications were evaluated by a panel of 5 elements of the ACE Board with no conflict of interests (i.e., supervisors or co-workers), led by Dr. Nuno Ratola, the ACE Scholarship Officer. The final ranking awarded the following candidates (in alphabetical order): Daniela Pereira (Faculty of Pharmacy - University of Porto, Portugal), Eva Salgado (Faculty of Engineering - University of Porto, Portugal), Indira Castro (Robert Gordon University, Scotland) and Maja Percinec (University of Zagreb, Croatia). Congratulations to all!

