

EXTECH 2021

XXIII INTERNATIONAL SYMPOSIUM ON ADVANCES IN EXTRACTION TECHNOLOGIES

The International Symposium on Advances in Extraction Technologies (ExTech) represents the major conference emphasizing new developments in sample preparation, analytical extraction, and sample clean-up techniques. This was the 23rd edition of a conference which started back in 1999 by Prof. Janusz Pawliszyn (University of Waterloo, Canada). Along this time, the congress has been annually held around the world. ExTech has become a unique and vital medium for the exchange of information and ideas in the growing field of sample preparation. This year it took place from 29th of June to 2nd of July in Alicante (Spain). The conference was extraordinarily co-organized by the University of Alicante and the University of Islas Baleares (both in Spain). Due to the COVID-19 pandemic situation worldwide, the conference was sadly held in a virtual format.

The schedule was organized in a three-day meeting, and it was divided into 14 talk sessions containing two plenary lectures, 16 keynote lectures, and 57 oral presentations. Concerning the poster sessions, there were 200 poster communications presented in 4 sessions. Furthermore, out of the total number of contributions, 19 talks and 129 poster communications were presented by young researchers. Additionally, there was an exhibition of the recent developments in analytical instrumentation. Indeed, 11 talks were given by specialists from companies sponsoring the event.

The communications presented in this conference dealt with different aspects of extraction topics (fundamental and trends in SPE/SPME, new extraction phases, new technologies, sample preparation, microextraction approaches) and a wide variety of applications (in material science, environmental, food control and analysis, biological, pharmaceutical, etc.). Therein, researchers had the opportunity to present, share and discuss their latest results with the rest of the participants. Several international renowned scientists composed the scientific committee, and the meeting was chaired by Dr. Lorena Vidal (University of Alicante, Spain) and Dr. Manuel Miró (University of Islas Baleares, Spain).

The ExTech 2021 started on Wednesday morning with an opening ceremony followed by three interesting keynotes focused on the fundamentals and trends in SPE/SPME conducted by specialists in the field: Stig Pedersen-Bjergaard, Elia Psillakis, and Gangfeng Ouyang. In addition, two more sessions were carried out in the morning. Session II was mainly focused on extraction phases. It included a keynote on the application of zeolites in sample preparation by Antonio Canals and three oral communications on silica fiber fabrication, bisphenol evaluation, and silica polymer assays. Regarding Session III, it included eight oral communications by young researchers dealing with materials science, environmental, and food applications. The talks covered several topics such as organic pollutant extraction by LPME, cyanotoxin analysis by SPE-HILIC-MS/MS, new extraction methods in microalgae, application of eutectic solvents for the extraction of beverage active compounds, or pharmaceutical screening in sewage sludge, among others.

Then, in the afternoon, Session IV started with communications conducted by young researchers focused on sample preparation. Throughout these five short communications, several studies were presented, mainly based on microextraction techniques for environmental, food, clinical, or cosmetic analysis, including new materials for its application. Afterwards, Session V consisted of oral communications by specialists on extraction techniques, embracing a wide range of interesting topics related to biological and food analysis. In this presentation, the advantages of many extraction techniques were presented, not only the common solid-phase or micro solid-phase extraction but also many innovations and alternative procedures to

improve the sample treatment step. Finally, the day ended with two plenary communications by Janusz Pawliszyn and Fabio Augusto. With them, the audience could learn about the fundamentals of microextraction techniques and their applications from two recognized specialists in this field. Poster sessions I and II were carried out at midday and the end of the day.

On Thursday, the day started with Session VII, which was focused on microextraction methodologies. This first session included a total of seven interventions, where the presence of Spanish speakers was truly remarkable. During the first three keynotes carried out, sustainability was one of the main topics. Then, three interesting communications of 15 minutes of duration each one and the last presentation by Bruker's Development Laboratory could be enjoyed by attendees. After a short pause starting with a slight delay, six communications on sample preparation (EuChemS-DAC) belonging to session VIII were carried out. The first one also talked about green chemistry and was, therefore, more focused on sustainability. Some of the communications in this session were rearranged concerning the initially planned timetable. It is important to mention that the main sample type in which the sample preparation techniques exposed were focused on was environmental samples, while other applications such as biological samples were also mentioned. The poster session III took place at the end of the morning.

The afternoon continued with four fascinating communications that closed session IX. The talks covered topics as diverse as *in-situ* extraction, multi cumulative trapping HS-SPME, and the application of 3D printed structures or the polyamide-coated paper-based sorptive phase for sample treatment. Then, session X dedicated to clinical and biological analysis began. Here, Jared L. Anderson held a keynote on the high throughput nucleic acid sample preparation and analysis. Later, Anna Roszkowska presented SPME-based sample preparation strategies in the area, while Marcela A. Segundo highlighted the bead injection lab-on-valve automation for affinity separations. Two talks about the extraction of active compounds with toxicological interest in medicine closed the session. The session young researchers (session XI) dedicated to pharmaceutical and biological applications and included interesting presentations about diverse analytical methodologies to determine bioactive compounds, extract pharmaceuticals or assess contamination by cytostatic, among other topics. The day concluded with the general session of posters III and IV.

The last day, Friday 2nd July, began with session XII focused on extraction technologies for organics. Two keynotes were devoted to microextraction techniques and four oral communications to show the potential of different strategies for the extraction of these compounds from various samples such as food, footwear material and cigarettes samples. After a pause, session XIII dedicated to extraction phases (II) started mainly focused on the application of novel materials and polymers for the sample preparation of complex matrices. Then, poster sessions I, II, III and IV took place during one hour. The afternoon started with session XIV about environmental analysis. After a keynote about the analysis of microplastics in waters, different oral communications related to the extraction and analysis of environmental contaminants varying in their nature were presented. All of them emphasized the importance of controlling contaminants in order to protect the environment.

The ExTech 2021 concluded with the closing lecture presented by Pablo Richter about Eco-efficient analytical methodologies using rotating-disk sorptive extraction. Afterwards, during the closing ceremony the Royal Society of Chemistry-Separation Science Group (RSC-SSG), EuChemS-DAC Sample Preparation Study Group and Network, Analytical and Bioanalytical Chemistry Journal (ABC)-Springer, Bruker and Gerstel awarded the best talk and five best poster communications presented by young researchers. Finally, all the participants were invited to the next ExTech 2022 that will be held in Chile.

Carolina Belenguer Sapiña
Enric Pellicer Castell
Department of Analytical Chemistry
University of Valencia

Laura Martin Pozo
Laura Carbonell Rozas
Department of Analytical Chemistry
University of Granada

Laura Rubio Lareu
Department of Analytical Chemistry, Nutrition and Food Science
University of Santiago de Compostela