

ASMS 2021: Environmental Applications Workshop Report

Monday, November 1st, 5:45pm, Room 113ABC

“Enhancing Environmental Applications with Tandem Ion Mobility Mass Spectrometry”

Organized by the Environmental Applications Interest Group,

Co-chairs Andrew Ottens, Paul Chiarelli & Pierangela Palma

Presided by Andrew Ottens & Paul Chiarelli

The Environmental Workshop attendance was approximately 56 scientists in person counted within the room by the middle of the session with an estimated 24 additional online attendees (based on the sampling of those who filled out the evaluation form). We were pleased with the participation given the limited evening activities and complexity of remote participation in the 2021 meeting. We kept with the new format enacted in 2019. The first half of the program involved a data-blitz (8 min) presentation session by PhD students:

Data-Blitz Presentations on IMS-MS in Environmental Applications

Rebecca Beres, PhD Candidate, Erin Baker Lab, North Carolina State University

“Lipidomic Studies of the Placenta and Brain Highlight Effects of Prenatal Exposure to Flame Retardants”

Elvin Cabrera, PhD Candidate, Brian Clowers Lab, Washington State University

“Enhancing Precision of Ion Mobility Measurements Using Stepped Frequency Modulation and Direct Synchronization with Ion Trap Mass Analyzers”

Benedicta Donkor, PhD Candidate, Ahmed Hamid Lab, Auburn University

“Identification of pesticides and their degradation products using liquid chromatography ion mobility mass spectrometry (LC-IM-MS) with computational calculations”

Kaylie Kirkwood, PhD Candidate, Erin Baker Lab, North Carolina State University

“Utilizing pine needles and non-targeted multidimensional measurements to spatially and temporally profile per- and polyfluoroalkyl substances (PFAS)”

The student speakers did an excellent job with their presentations and in fielding a variety of questions from the audience after each oral. Feedback from the audience indicated that “the student data blitz talks were great and had a very diverse pool of speakers”. We next introduced a panel of experts on the application of IMS in environmental MS:

Workshop Panel Discussion on IMS-MS in Environmental Applications

Daniel Cuthbertson, Metabolomics Applications Scientist, Agilent Technologies, Colorado

Artem Filipenko, Applied Markets Manager, Bruker Daltonics, Massachusetts

Michael Thurman, Co-Director, Laboratory for Environmental Mass Spectrometry, College of Engineering and Applied Sciences, University of Colorado Boulder

The panel was formulated to bring in application-specific knowledge for the novel instrumentation of ion mobility in the analysis of environmental pollutants and outcomes. Panel formation, however, was challenged by the limited participation in ASMS 2021, with other experts contacted not available, limiting diversity on the panel. Overall, audience participation kept up an open discussion on implementation ion mobility and best practices, with the panel addressing the topic successfully. The session ended on time at 7pm, with the traditional dinner skipped due to COVID limitations.

The room was over-sized for the workshop, seemingly having capacity for 3-4 times the number of expected attendees. This did make the session less intimate than desired; however, engagement continued throughout the program resulting in a successful workshop. The AV techs in the room did help considerably with some microphone difficulties.

Andrew Ottens

Paul Chiarelli

Co-Presiders