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Bischoff, Rainer; Karst, Uwe

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Editorial

Electrochemistry-mass spectrometry: Fundamentals and applications in pharmaceutical and environmental sciences



This Special Issue of *TrAC* gives an overview over the current state of the evolving, interdisciplinary field of electrochemistry coupled to mass spectrometry (EC-MS). The disciplines of EC and MS have a long history in making major contributions to analytical chemistry and beyond. Both of them are instrumental techniques, meaning that a thorough understanding of the underlying technology and physics is indispensable for improving current methodologies and for developing new approaches. In addition, making use of EC-MS requires a good understanding of the various application areas, for example, related to the metabolism of drug molecules or environmental pollutants. EC-MS and related coupled approaches, such as EC-nuclear magnetic resonance (EC-NMR), covered in this Special Issue, are thus *bona fide* interdisciplinary areas of research, which cannot be covered by a single author. It is the value of this Special Issue that a number of experts in the field came together to give overviews over their respective areas of research, making this edition of *TrAC* a resource for anybody working in this field and related fields, or wanting to enter this field of research.

The Special Issue comprises 13 articles. An introduction to the fundamentals of EC (Baltruschat et al.) is followed by an overview over the development of the EC-MS field with particular emphasis on electrospray ionization (Bruins) and the combination of EC with ambient ionization methods (Chen et al.). Two articles about coupling capillary electrophoresis (Matysik et al.) and NMR to EC (Niessen et al.) refer to less widely used but powerful techniques.

Moving towards applications, Odijk et al. provide an insight into various approaches to miniaturize the EC-MS set-up, which is fol-

lowed by a number of articles on the application of EC-MS to studying drug metabolism starting with the use of modified electrode surfaces (Bischoff et al.), continuing with approaches towards drug-metabolite synthesis (Permentier et al.) and the study of reactive drug metabolites (Karst et al. and Boujtita et al.). This is placed into the context of industrial drug research and development by Jurva et al.

The Special Issue closes with articles on EC-MS for nucleic-acid analysis (Oberacher et al.) and EC-mediated removal of pharmaceuticals from wastewater streams, a growing environmental problem (Sirés et al.).

We hope that the readers of *TrAC* will find this collection of reviews useful, giving them new ideas on how to integrate EC-MS into their particular fields of research. We would like to thank all authors and reviewers for their cooperation, as well as the Publisher in making this Special Issue possible.

Rainer Bischoff

Analytical Biochemistry, University of Groningen, Antonius Deusinglaan 1, 9713 AV Groningen, Netherlands.

E-mail address: r.p.h.bischoff@rug.nl

Uwe Karst

Institute of Inorganic and Analytical Chemistry, University of Münster, Correnstrasse 30, D-48149 Münster, Germany.

E-mail address: uk@uni-muenster.de