

Half Day Short Course

M02. Potentiometric Probes and Membrane Electrodes

Content

Membrane electrodes are ubiquitous measurement tools in analytical chemistry for the detection of a range of ionic species, including pH, and gases. They are very low power and lend themselves well for handheld and wearable applications. Yet, for many researchers their function is still a mystery. Join us and learn from experts in the field.

- 1 How do membrane electrodes work? Understanding underlying fundamental principles and materials aspects. Selectivity, binding constants, permselectivity
- 2 Principal characteristics of ionophores. Influence of structure on sensor lifetime. Design of reliable all-solid-state membrane electrodes.
- 3 Established and state of the art reference electrode concepts. Liquid junction potentials. Potential errors and pitfalls.
- 4 Practical aspects: the importance of symmetry, ion activities vs. concentration measurements, the value of membrane electrodes in speciation analysis.
- 5 Questions & Answers

Details

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| Instructor | Prof. Eric Bakker Dr. Elena Zdrachek University of Geneva |
| Date | 27 August 2023 |
| Time | 09:00–12:00 h |
| Duration | 3 h plus coffee break |
| Location | CICG Geneva |
| Fees | 130 CHF (delegate) 80 CHF (student) |
| Included | Coffee break If booking 2 courses: lunch |

Instructors



Prof. E. Bakker

Prof. Dr. E. Bakker is professor and chair of analytical chemistry at the University of Geneva. Educated in Switzerland with a Ph.D. from ETH Zurich, he spent 14 years in the U.S. (University of Michigan, Auburn University, Purdue University) and 3 years in Australia (Curtin University in Perth) before moving to Geneva. He is a recognized expert on understanding, developing and applying chemical sensors, especially potentiometric probes and membrane electrodes. He

has published about 400 papers in his career which have been globally cited on the order of 30'000 times. He serves as Executive Editor of the ACS journal ACS Sensors.



Dr. E. Zdrachek

Dr. E. Zdrachek is maître assistant in the group of Prof. Bakker and a highly experienced researcher and educator in the field of membrane electrodes. She was educated in Minsk with Prof. V. Egorov, an eminent scholar in the same field, where she received her doctoral degree. In her work she has developed a novel methodology to determine unbiased selectivities of membrane electrodes using time-dependent techniques, studied the behavior of all-solid-state

and very thin membrane electrodes, explored the concept of symmetry for achieving reliable sensors and has a strong focus on environmental aquatic sensing.