

ELECTROCHEMICAL IMPEDANCE SPECTROSCOPY WORKSHOP

Goal

This workshop is designed to provide a foundational understanding of **Electrochemical Impedance Spectroscopy (EIS)**, with a focus on practical insights. Participants will learn:

- Develop a basic understanding of EIS and its principles
- Explore the physical origins of impedance (derived from measurements of electrical components)
- Learn how to model electrochemical systems through equivalent circuits (Fitting)
- Discover best practices for analyzing and presenting impedance spectra
- Understand both the potential and the limitations of the method

We will focus on delivering qualitative knowledge that supports intuitive understanding.

Location and Date

Ulm University
Lise-Meitner-Straße 16
89081 Ulm

26th – 27th November 2025

Workshop Instructors

Sandro Haug and Thomas Zubiks
Metrohm Deutschland GmbH & Co. KG



Registration

The workshop is open for GS-EES, CELEST and HIU members and guests of DESTINY. Participants of this EIS workshop can gain 0,5 CP for “Scientific Training” in the GS-EES qualification program.

Please register [online](#) until 26th October 2025.

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Schedule

Time	Wednesday, 26.11.2025	
10:00 – 10:30	Welcome and intro Welcome / introduction of participants, speakers and Metrohm	
10:30 – 12:00	Presentation with Demo Experiments: Basics electrochemical Impedance spectroscopy Part 1 Measuring technique and circuit elements	S. Haug
12:00 – 13:00	Lunch	
13:00 – 14:00	Presentation with Demo Experiments: Basics electrochemical Impedance spectroscopy Part 2 Measuring technique and circuit elements	S. Haug
14:00 – 14:45	Presentation Measuring device – Hardware and Software implementation	T. Zubiks
14:45 – 15:00	<i>Coffee break and discussion</i>	
15:00 – 17:00	Demo Experiments Conductivity measurements of battery electrolytes and determination of the Mac Mullin Number	T. Zubiks/ S. Haug

Time	Thursday, 27.11.2025	
09:00 – 10:00	Presentation: Requirements for valid impedance measurements	S. Haug
10:00 – 10:15	<i>Coffee break and discussion</i>	
10:15 – 11:30	Presentation: Fitting routines and data evaluation	S. Haug
11:30 – 12:00	Presentation Applications and Best Practice (Focus battery) Part 1	S. Haug
12:00 – 13:00	<i>Lunch</i>	
13:00 – 14:15	Presentation Applications and Best Practice (Focus battery) Part 2	S. Haug
14:15 – 14:30	<i>Coffee break and discussion</i>	
14:30 – 15:15	Demo Experiments Troubleshooting	T. Zubiks
15:15 – 15:30	Final discussion / End of seminar	