

Theory Monday, March 11th

09:00 **Welcome**

09:30 **Voltage, Current, Time**

Mathematical and Physicochemical Basics of EIS
Dr. C. A. Schiller

10:30 *Coffee Break*

11:00 **The Connection between Structure, Processes, and Impedance of Electrochemical Objects**

Dr. C. A. Schiller

The Contributions of Electrochemical Processes I:

Discrete and Distributive Impedance Models
Dr. C. A. Schiller

12:30 *Lunch*

14:00 **The Contributions of Electrochemical Processes II:**

Models for Processes with Mass Transport
Dr. W. Strunz

14:30 **Validation of Impedance Spectra**

Comparison between Measurement Model and Z-HIT Algorithm
Dr. W. Strunz

15:00 *Coffee Break*

15:30 **Impedance Spectroscopy: A Practical Study**

Impedance-based Analysis of Fuel Cells and Electrolyzers
Dr.-Ing. A. Weber

16:15 **Photo-Electrochemical Techniques:**

Dynamic and Spectral Resolved Measurements on DSSC, OSC, OLED, and Electrochromic Devices
Dr. M. Multerer

19:00 *Dinner & Social Evening*

Practical Courses Tuesday, March 12th

Practical Courses (rotating through the courses in groups)

Course 1: **Handling Changing States during EIS Measurements**

Dr. M. Multerer

Course 2: **Artefacts in EIS Measurements of Low Impedance Samples**

Dipl. Ing. S. Fröba

Course 3: **Artefacts in EIS Measurements of High Impedance Samples**

Dr. W. Strunz

Course 4: **From Measurements to Physical Parameters - Interpretation and Modelling of Electrochemical Impedance Spectra**

Dr. W. Saddique

Course 5: **Multi-sine and series EIS (with Signal Acquisition)**

Dr. J. Odrobina

Course 6: **Coating & Laminate Testing through Combined AC-DC-AC Methods**

Prof. Dr. R. Kaus + M.Sc. A. Krimalowski

09:00 **Organizing Groups**

09:20 **First Course**

10:10 **Changing Course**

11:00 *Coffee Break*

11:30 **Changing Course**

12:20 *Lunch*

13:50 **Changing Course**

14:40 **Changing Course**

15:30 *Coffee Break*

16:00 **Changing Course**

19:00 *Dinner*

Practical Courses Wednesday, March 13th

Parallel Session 1: Photoelectrochemistry/Photovoltaics

(Dr. M. Multerer + Dr. W. Saddique)

- 08:30 Understanding Alternative Solar Cell Concepts – The Application of Intensity Modulated Photo Current (Voltage) Spectroscopy in Combination with EIS + Fitting
- 09:30 Photo Current Spectroscopy (CIMPS-pcs) Applied on Perovskite, Monolithic-, Organic- and Dye-Sensitized Solar Cells

Parallel Session 2: Batteries/Fuel Cells/Electrolyzers (rotating through the courses in groups)

Course 1: EIS-Measurements and Data Processing applied on a Fuel Cell Model
Dr. N. Wagner

Course 2: Parallel Measurements on Individual Cells in Battery and Fuel Cell Stacks (+ Battery Cycling)
Dr. J. Odrobina

Course 3: Non-linear Frequency Response Analysis
Dr. C. A. Schiller

- 08:30 First Course
- 09:30 Changing Course
- 10:30 *Coffee Break*
- 11:00 Changing Course
- 12:00 *Lunch*

Main Session (rotating through the courses in groups)

Course 1: Discussing the Evaluation of Impedance Spectra (Practice Session: Laptop with Zahner Analysis Software required)
M.Sc. A. Krimalowski

Course 2: Combination & Automation of Measurements: Script + Sequencer Software
Dr. W. Saddique

Course 3: Integration and Remote Control of Zahner Products
M.Eng. M. Krapp

- 13:30 First Course
- 14:10 Changing Course
- 14:50 Changing Course
- 15:30 *Final Coffee Break + Farewell*
- 16:00 End

33rd Kronacher Impedanztage

(Kronach Impedance School)

2024

Preliminary Program

March 11th – 13th, 2024

Management

Zahner-Elektrik GmbH & Co. KG

Thüringer Str. 12, 96317 Kronach, Germany

Tel: +49-(0)9261-962119-0

Fax: +49-(0)9261-962119-99

Website: <https://zahner.de>

Email : contact@zahner.de

Seminar Location

Bildungszentrum Kloster Banz

96231 Bad Staffelstein, Germany

Tel.: +49-(0)9573-337-0

Fax: +49-(0)9573-337-33

email: banz@hss.de