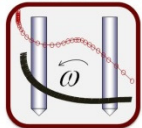


IWIS 2011



International Workshop on Impedance Spectroscopy
September 28-30 2011, Chemnitz - Germany



Final Program

Organized by:



Chairman's Welcome Message

Encouraging the active scientific dialogue between specialists in the field of Impedance Spectroscopy from different backgrounds and fields of science and technology is the aspired aim of the international workshop on impedance spectroscopy (IWIS).

Scientists working in different fields of research, such as electro chemistry, material science, biology and medicine, electronics and sensors meet together and present recent developments and findings. Tutorials give a good overview of special basics all around the method and make this challenging measurement method better accessible. An exhibition informs about the latest news concerning measurement equipment and devices. These are the main components of this annual international workshop taking place at Chemnitz University of Technology. It has been launched already in June 2008 and since 2009 it became an international workshop addressing more fundamentals and application fields of impedance spectroscopy.

In the meanwhile, the IWIS workshop has established itself as a platform for promoting experience exchange and networking in the scientific and industrial field. Since two years, contributions from the workshop are published within the book series Lecture Notes on Impedance Spectroscopy by Taylor & Francis. The series aims to highlight new advances and presents different approaches in dealing with impedance spectroscopy including modeling, measurement and applications.

We thank all contributors for the interesting contributions, for confidence and for promoting the scientific exchange all around impedance spectroscopy.

The organization of the workshop has requested a considerable effort of the organizing team from the chair for measurement and sensor technology which makes it possible to organize this international event actually within Chemnitz University of Technology.

We thank the IEEE Instrumentation and Measurement Chapter Germany for the technical support of the event.

We would like to thank the organizing and program committees for the huge work done and for the work still coming associated with the workshop proceedings.

We would like to thank you for choosing IS 2011 and for coming to Chemnitz!

Prof. Olfa Kanoun

General Chair

IWIS 2011 Organizers

General Chair:

O. Kanoun (D)

Honorary Chair:

H.-R. Tränkler (D)

Program Committee Chair:

U. Tröltzsch (DE)

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P. Büschel (DE)

Organizing Committee Chair:

T. Keutel (DE)

Organisation Committee:

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D. Bouchaala (TN)	F. Wendler (DE)
K. Fichtner (DE)	X. Zhao (DE)
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General Information

The City of Chemnitz

Chemnitz, more than 800 years old, is situated in the heart of Saxony. The city is the third-largest in Saxony and is designated as "City of Modernity". Developed at the time of Classical Modernism, it became the "Manchester on Saxony", giving impulses to the development of business and science. The influences of the cultural and architectural Modernism are visible so that Chemnitz is today city with many interesting facets. Fascinating architecture reflects the changing times and spirit of those things which have shaped the city: industrial monuments, redeveloped Gründerzeit residential quarters such as Kassberg, Villa Esche or the city centre, which has been completely modified since reunification, constructed by Helmut Jahn, Hans Kollhoff and Christoph Ingenhoven, bridge the gap from yesterday to today and to tomorrow.

Conference Venue

The International Workshop on Impedance Spectroscopy will take place at the Campus of Chemnitz University of Technology. You can find it at:

Chemnitz University of Technology
Neues Hörsaal und Seminargebäude
Room N113
Reichenhainer Straße 90
09126 Chemnitz

Social Event

On Wednesday 28th September from 15:00 we offer a short trip to Freiberg for visiting the "terra mineralia" exhibition at the TU Bergakademie Freiberg. Departure is 15:00 at the conference hall at the Reichenhainer Straße 90. At 15:15 the bus will also stop in the city centre near the hotels at the Karl Marx Monument. The next stop is the Kleine Erzgebirge in Oederan and includes a guided tour and some information to the history of Saxony. The Terra Mineralia in Freiberg is the next stop for about 1.5 hours.

<http://www.terra-mineralia.de/>

A dinner at the Schwanenschlösschen in Freiberg is the end of the social program. After it, the bus returns to Chemnitz.

Special Dinner

On Thursday 29th September at 19:30 the special dinner will take place in the Industriemuseum. Go to the bus station 'Roter Turm' and use the tram No. 2 into direction 'Schönau'. The station in front of the Industriemuseum is named 'Industriemuseum' (Figure 3). You can find it at the following address.

Industriemuseum Chemnitz
Zwickauer Straße 119
09112 Chemnitz

Accommodation

For your convenience the Hotel Mercure was chosen as a recommendation for your stay in Chemnitz. It is the highest building in the city center located close to the opera, the Galerie Roter Turm shopping mall and the town hall. The hotel provides you nicely arranged rooms and various recreational offers. Please get in contact with the hotel Mercure if you want to book a room.

Mercure Hotel Kongress Chemnitz
 Brückenstrasse 19
 09111 Chemnitz
 Phone: +49 371 6830
 Fax: +49 371 683505
 E-mail: H1581@accor.com

Workshop attendees can book at special conditions by mentioning the keyword “HVC 2201”.

Business Room Single	EUR 59,00 per night (Incl. Breakfast)
Business Room Double	EUR 73,00 per night (2 Pers., Incl. Breakfast)

The following other hotels can also be recommended

Hotel	Hotel Chemnitzer Hof Theaterplatz 4 09111 Chemnitz Phone: +49 371 68 40 Fax: +49 371 6 76 25 87 chemnitzer.hof@guennewig.de www.guennewig.de	AMBER-Hotel Wildparkstraße 6 09247 Chemnitz-Röhrsdorf Phone: +49 3722 513 0 Fax: +49 3722 513 100 chemnitz@amber-hotels.de www.amber-hotels.de	Seaside Residenz Hotel Bernsdorfer Straße 2 09126 Chemnitz Phone: +49 371 35510 Fax: +49 371 3551122 info@residenzhotelchemnitz.de www.seaside-hotels.de
keyword	Technische Universität Chemnitz	Technische Universität	Technische Universität Chemnitz
Single	EUR 52,00	EUR 47,00	EUR 54,00
Double	EUR 89,00	EUR 64,00	EUR 74,00

For other hotels, feel free to ask Chemnitz tourist information:

Tourist-Information
 Markt 1
 09111 Chemnitz
 Phone: +49 371 690 680
 Fax: +49 371 690 6830
 E-mail: info@chemnitz-tourismus.de

Travel to Chemnitz

You can reach Chemnitz University of Technology via car and train.

By car from motorway A72

- Take the motorway exit ‘Chemnitz Süd’
- Use B173 / Neefestraße direction ‘Stadtzentrum’
- After 1 km turn right on the B169 / ‘Südring’
- After 5.5 km use the motorway exit ‘Reichenhainer Straße’ direction ‘Technische Universität’
- You’ll reach campus after 1.5 km, the conference venue is on the left side

By car from motorway A4

- Take the motorway exit ‘Chemnitz Mitte’
- Use B95 and go straight ahead until B95 turns left – don’t turn left
- Go ahead on ‘Gustav Freytag Straße’ and turn right at the ‘Reichenhainer Straße’
- After 1.3 km you’ll reach campus, the conference venue is on the right side

By train

- Get off at Chemnitz central station and use tram 6 or 522 direction 'Zentralhaltestelle'
- Get off the tram at Station 'Roter Turm'
- Use Bus 51 direction 'Altchemnitz' or 'Reichenhain'
- Get off at 'TU Campus'

Airport

- The next nearby Airports are Dresden and Leipzig
- From airport Dresden go A4 direction Chemnitz/Erfurt.
- From airport Leipzig-Halle go on A14 direction Dresden, at 'Dreieck Nossen' go on A4 direction Chemnitz/Erfurt. Proceed as described above.

Taxi

If you need a taxi in Chemnitz call: +49 371 369 000

Getting around in Chemnitz

All buses and trams in Chemnitz meet at the Central Bus Station ('Zentralhaltestelle')

Information about public transport and timetables you can find here:

<http://www.cvag.de/>

Getting from the Hotel Mercure to the university:

Take a 5 to 10 minute walk to the bus station 'Roter Turm', closely located to the hotel Mercure and take the bus line 51 or E51 into direction 'Chemnitz, Altchemnitz' or 'Chemnitz, Reichenhain'. The station at the university is named 'TU Campus' and is directly in front of the entrance to the university.



Figure 1: City center with hotel and bus station



Figure 2: Campus with central lecture hall

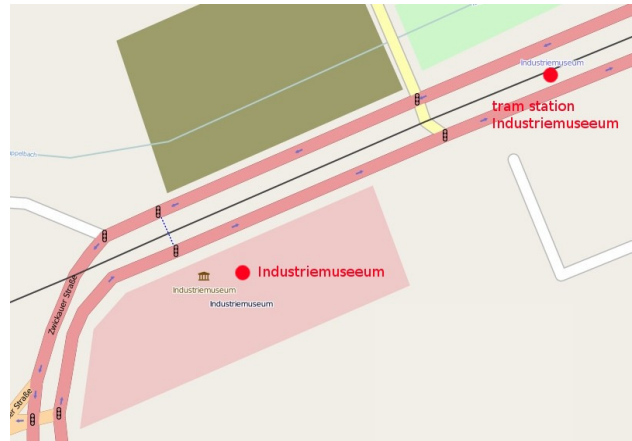


Figure 3: Special dinner at Industriemuseum

Internet Access

During the event wireless network is available at the campus site. Please use the following registration information to login:

Network name: special
WPA key: IS11-mst

If you have problems connecting to the network please ask organizers for help.

Exhibition

During the Workshop following exhibitors will be present:



Technical Program

The workshop takes place in the central lecture hall room N113.

Wednesday, September 28th, 2011

8:00 **Registration**

Tutorial 1

9:00 Fundamentals of electrochemistry
Abram Krebs, Gamry Instruments

Tutorial 2

10:00 Properties of coatings from the point of view of EIS
Werner Strunz, ZAHNER-Elektrik

Tutorial 3

11:00 Impedance measurement methods from 10 Hz to 500 GHz
Bernhard Schweiger, Agilent Technologies

12:00 **Lunch break**

Tutorial 4

13:00 Modeling of impedance spectra
Uwe Tröltzsch, Chemnitz University of Technology

Tutorial 5

14:00 Nonlinear parameter estimation
Paul Büschel, Chemnitz University of Technology

15:00 **Social Program**

Thursday, September 29th, 2011

8:00 **Registration**

8:30 **Opening**

Plenary Talk

Chair: Olfa Kanoun, Chemnitz University of Technology

8:45 Some Physical Meanings of Constant Phase Element
Bernard Tribollet, Université Pierre et Marie Curie

Session 1: Fundamentals

Chair: Norbert Wagner, German Aerospace Center (DLR), Institute for Technical Thermodynamics

9:30 Unexpected Low Frequency Properties of Simple Resistive Contributions to the Impedance
Carl-Albrecht Schiller, ZAHNER elektrik

9:50 Multisine EIS Measurements and Applications to Energy Systems
Abram Krebs, Gamry Instruments, Inc.

10:10 Impedance Spectroscopy to quantify the non-stationary behavior of a rapidly evolving electrochemical process - Calculation an instantaneous impedance value by using Odd Random Phase multisine Electrochemical Impedance Spectroscopy (ORP-EIS)
Tom Breugelmans, Vrije Universiteit Brussel

10:30 **Coffee break, Exhibition**

Session 2: Energy Converters

Chair: Michael Schneider, Fraunhofer Institute for Ceramic Technology and Systems

11:00 Theory and Application of Electrochemical Impedance Spectroscopy for Fuel Cell Characterization
Norbert Wagner, German Aerospace Center (DLR), Institute for Technical Thermodynamics

11:20 Impedance Spectroscopy for Modelling of Lithium-Ion Batteries
Stefan Käbitz, RWTH Aachen, ISEA

11:40 Impedance behaviour of conjugated polymeric coatings of 3,4-alkylenedioxythiophenes
A. Sezai Sarac, Istanbul Technical University, Department of Chemistry, Polymer Science and Technology, Nanoscience & Nanoengineering

12:00 Comparison between State of Charge determination methods for lithium-ion batteries based on the measurement of impedance, voltage and coulomb counting
Georg Fauser, Fraunhofer IKTS

12:20 **Lunch break, Exhibition**

Session 3: Signal Processing

Chair: Uwe Tröltzsch, Chemnitz University of Technology

- 13:30 A Novel Approach for Impedance Spectrum Estimation: the Local Polynomial Method,
Benjamin Sanchez, Electronics Department Technical University of Catalonia (UPC)
- 13:50 Fast FPGA based Chirp Signal Processing for Broadband Impedance Estimation
Dennis Trebbels, HSG-IMIT
- 14:10 Distance Measure for Impedance Spectra for Quantified Evaluations
Meike Slocinski, Daimler AG
- 14:30 Simultaneous acquisition of impedance and gravimetric data for the characterization of
non-stationary electrochemical systems
Aliaksandr Bondarenko, Center for Electrochemical Sciences, Ruhr-Universität Bochum
- 14:50 Miniaturized self contained Spatial-TDR Field Measurement System
Dennis Trebbels, HSG-IMIT
- 15:10 **Poster Session, Exhibition, Coffee Break**

Session 4: Corrosion

Chair: Bernard Tribollet, Université Pierre et Marie Curie

- 16:10 Thermoelectrochemical investigation of silver electrodeposition from nitric and tartaric
solutions
Omar Aaboubi, LACM - DTI, UFR Sciences
- 16:30 Electrical Impedance Spectroscopy: a Tool to Investigate the Influence of Molybdenum
Electrode Corrosion on Ionic Conductivity of Antimony- Containing Glasses
Ali Saberi, Chair of Materials Processing, Faculty of Engineering Science, University of
Bayreuth
- 16:50 Effect of sulfide ions on corrosion behaviour of steel in a high chloride solution saturated
with carbon dioxide
Yamina Louafi, Université des Sciences et Technologies Houari Boumédiène, Bab-Ezzouar
- 18:00 **End of day 2**
- 19:30 **Special dinner**

Friday, September 30th 2011

Plenary Talk

Chair: Olfa Kanoun, Chemnitz University of Technology

- 8:30 Bio-Inspired Multifunctional Materials for Spatial Damage Identification and Localization
Kenneth Loh, University of California

Session 5: Biological and medical Applications

Chair: Kenneth Loh, University of California

- 9:15 Erythrocyte orientation and lung conductivity analysis with a high temporal resolution FEM model for bioimpedance measurements
Mark Ulbrich, RWTH Aachen University
- 9:35 Investigation of Infection Defense Using Impedance Spectroscopy
Anna Schröter, Solid-State Electronics Laboratory, Technische Universität Dresden
- 9:55 Diagnosing Structural Changes in Biological Tissue using Inductive Impedance Spectroscopy
Maral Heidary Dastjerdi, Institute of Measurement Engineering and Sensor Technology, University of Applied Sciences HRW
- 10:15 A modified Fricke Model for characterization of Meat Aging
Mahdi Guerhazi, Chemnitz University of Technology
- 10:35 **Poster Session, Exhibition, Coffee Break**

Session 6: Micro and Nano Scale

Chair: A. Sezai Sarac, Istanbul Technical University, Department of Chemistry, Polymer Science and Technology, Nanoscience & Nanoengineering

- 11:00 Thickness dependency of the relative permittivity in thin oxide films investigated by micro-EIS
Michael Schneider, Fraunhofer Institute for Ceramic Technology and Systems
- 11:20 Quantitative nanoscopic impedance measurements on ionic conductors using atomic force microscopy combined with impedance spectroscopy
Julia Krümpelmann, Uni Marburg
- 11:40 Material characterisation of nano scale solid state electrolytes
Frank Wendler, Chemnitz University of Technology
- 12:00 **Lunch, Exhibition**

Session 7: Eddy Current Sensors

Chair: Jörg Himmel, University of Applied Sciences HRW

- 13:00 Comparison of Eddy Current Theory and Finite Element Method for Metal Evaluation
Rauno Gordon, Tallinn University of Technology

- 13:20 Calculation of single turn coil impedance in face of an aluminium plate from magnetic vector potential
Uwe Tröltzsch, Chemnitz University of Technology
- 13:40 Eddy Current Validation of Euro-coins
Rauno Gordon, Tallinn University of Technology
- 14:00 **Closure**
- 14:15 **End of conference**

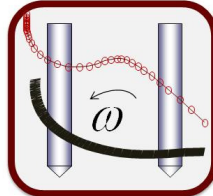
List of Posters

- 1 Microwave-assisted Synthesis and Properties of Nanosized LiMPO₄ (M = Mn,Co)
Christoph Neef, Kirchhoff Institute for Physics Heidelberg
- 2 Influence of nanoscaling on the electrochemical properties of LiCoO₂ and TiO₂
Carsten Jähne, Kirchhoff Institute for Physics University of Heidelberg
- 3 Investigations of thin CVD/ALD layers with impedance spectroscopy
Ingo Tobehn, CiS Forschungsinstitut für Mikrosensorik und Photovoltaik GmbH Erfurt

IWIS 2012 announcement

Chemnitz - Germany
September 26- 28 2012

IWIS 2012



Programm of the International Workshop on Impedance Spectroscopy 2011

	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	19:30
Wednesday 28th September	Registration	Tutorial 1	Tutorial 2	Tutorial 3	Lunch	Tutorial 4	Tutorial 5	Social Program					
Thursday 29th September	Exhibition												
	Regist.	Opening & Plenary	Fundamentals	Coffee Break	Energy Converters	Lunch	Signal Processing		Poster	Corrosion	Free time		Special Dinner
	Exhibition												
Friday 30th September	Regist.	Plenary	Biological and medical	Poster	Micro and Nano Scale	Lunch	Eddy Current Sensors	Closure					
	Exhibition												