



# LITHIUM BATTERIES SUMMER SCHOOL **BRNO** University of Technology

9<sup>th</sup> – 10<sup>th</sup> September 2017

PROGRAM BROCHURE



*A workshop supported by Metrohm Czech Republic.*



## Li-Batteries Summer School

Dear participants and batteries fans,

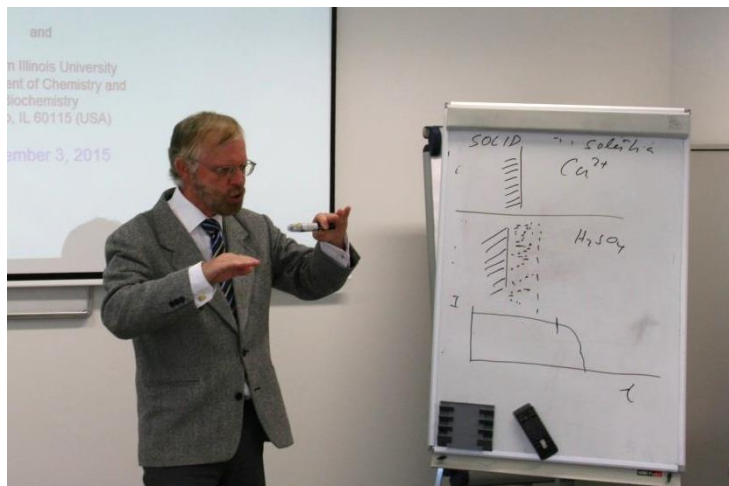
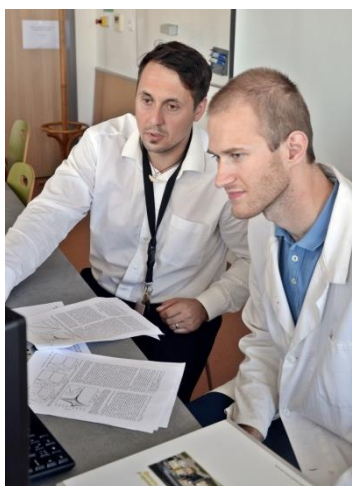
our **Li-Batteries Summer School** is an unique opportunity for people having an interest in the field of lithium power sources to get to know the modern investigation techniques that are mostly used for research and investigation of new advanced material. The Workshop of the Summer School consists of theoretical lectures but even more practical hands-on laboratory experiments. Both parts are lead by experts from the Centre for Utilization of Renewable Energy and also by invited specialist from cooperating foreign institutions.

The previous year of the workshop showed a strong interest in this growing field of energy storage and especially in the practically oriented laboratory part. Therefore we decided to extend the workshop to a two-day event. The workshop thus will also include the time for individual consultations and finally for not less important networking.

We believe that the workshop will be a good option how to deeply understand electrochemical processes inside batteries, how to obtain skills to measure and evaluate material performance and how to effectively begin your research career.

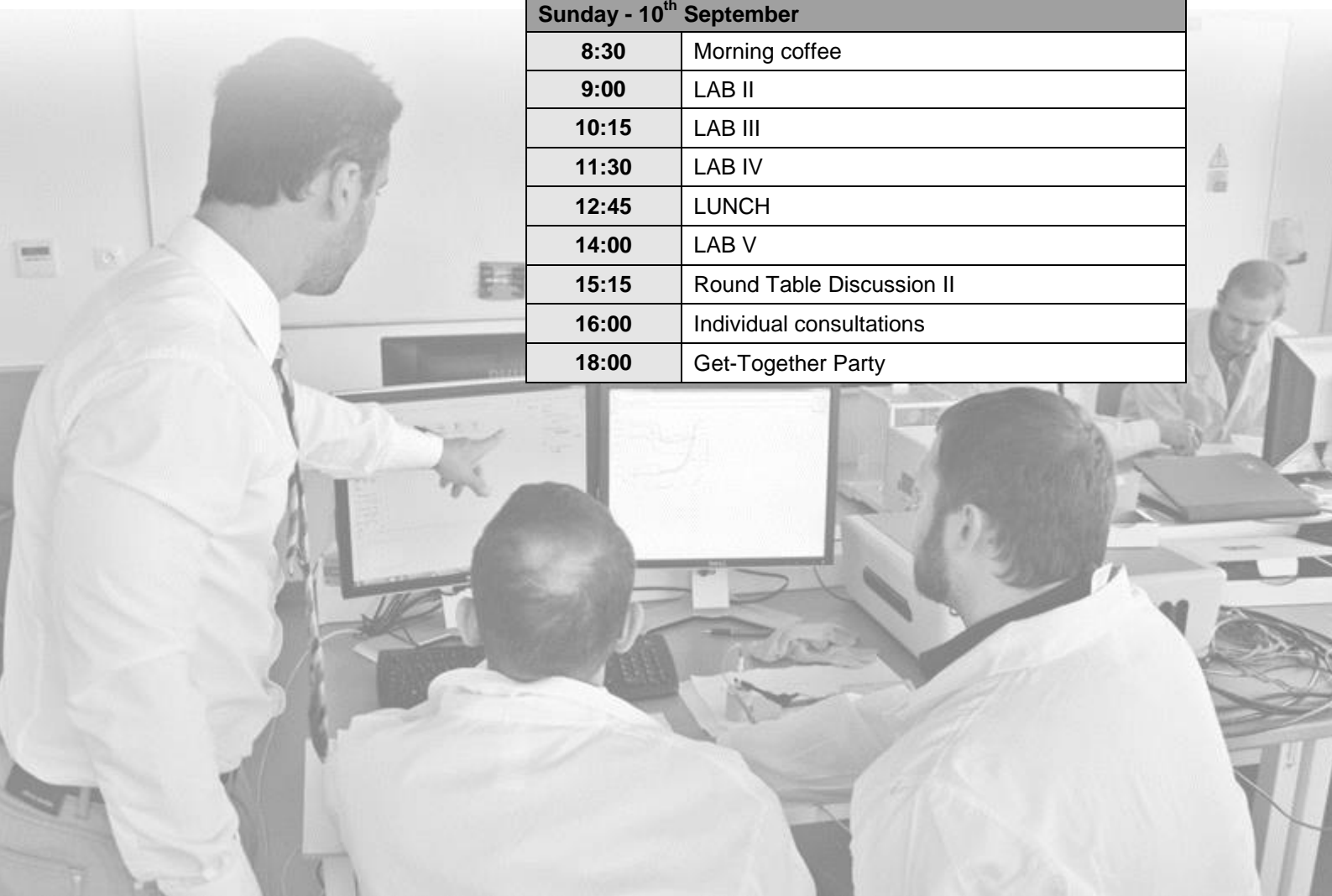
**WHEN:** 9<sup>th</sup> – 10<sup>th</sup> September 2017

**WHERE:** Brno University of Technology, Department of Electrical and Electronic Technology, Technická 10, Brno, Czech Republic 4<sup>th</sup> floor,  
Meeting room - N 4.38



**PROGRAM:**

<b>Saturday - 9<sup>th</sup> September</b>	
<b>9:30</b>	Registration
<b>10:00</b>	Workshop Introduction
<b>10:10</b>	Introduction of the Research Center at BUT
<b>10:30</b>	Lithium batteries - overview lecture
<b>11:15</b>	DC Techniques in Battery Research
<b>12:00</b>	AC Techniques in Battery Research
<b>12:45</b>	Round Table Discussion
<b>13:00</b>	LUNCH
<b>14:30</b>	XRD – possibilities of material evaluation
<b>15:00</b>	EQCM in Battery Research
<b>15:30</b>	Coffee break
<b>16:00</b>	LAB I
<b>17:30</b>	Conclusion of the first day
<b>19:00</b>	Social program
<b>Sunday - 10<sup>th</sup> September</b>	
<b>8:30</b>	Morning coffee
<b>9:00</b>	LAB II
<b>10:15</b>	LAB III
<b>11:30</b>	LAB IV
<b>12:45</b>	LUNCH
<b>14:00</b>	LAB V
<b>15:15</b>	Round Table Discussion II
<b>16:00</b>	Individual consultations
<b>18:00</b>	Get-Together Party



**WORKSTATIONS:**



**Setup Your Li-Cell**

- Work in a glove box under argon atmosphere
- Assembling the experimental Li-cell
- Preparation of electrodes
- Confirmation of the cell function

**DC Techniques**

- Cyclic voltammetry
- Galvanostatic cycling
- Determination of specific capacity
- Rate capability test
- Effect of pseudocapacitance



**Impedance Spectroscopy**

- Measurement of the Nyquist diagram
- Validation of the system response
- Selection of the equivalent circuit
- Capacity and diffusion behavior

**Quartz Crystal Microbalance**

- Deposition of the electrode material
- Cycling of material
- Detection of mass changes
- Data evaluation
- Stripping of the active mass



**XRD Structural Analysis**

- Sample preparation
- Set-up measurement
- Data evaluation using PDXL
- Determination of the phase composition
- Concept of In-situ measurement

## WORKSHOP FEE:

THE WORKSHOP REGULAR COST: EUR 380.-

EARLY REGISTRATION\*: EUR 350.-

*The workshop price includes:*

*All included - Printed materials, Coffee breaks, Lunch, Accommodation*

*\*Early registration requires payment before 1<sup>st</sup> August 2017*

## REGISTRATION:

For registration, please fill the following [FORM](#) or contact us at [libss@gmail.com](mailto:libss@gmail.com)

## CONTACT INFO:

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