The 17th International Conference
on Advanced Batteries, Accumulators and Fuel Cells

Program of Lectures and Posters

Organised by Brno University of Technology and co-sponsored by

The International Society of Electrochemistry
Institute of Electrical and Electronics Engineers
Shmuel De-Leon Energy Ltd.
Centre for Research and Utilization of Renewable Energy
Sunday, August 28th

17:00 – 20:00  Registration and Get-Together Party

Monday, August 29th

8:00  Registration

10:00  Opening of ABAF 17th

*Prof. Ing. Jarmila Dědková, CSc.*
Dean of Faculty of Electrical Engineering and Communication
*Prof. Ing. Jiří Vondrák, DrSc.*
Organization Committee
*Ass. Prof. Ing. Marie Sedlaříková, CSc.*
Organization Committee

10:30  *International Society of Electrochemistry*
A Look at the Present with Our Vision for the Future

10:40  *M. Doležal*
Information about Program SoMoPro III

10:50  *P. Barath*
Li- Batteries Summer School

11:00  Coffee Break

Lithium Batteries and Related Systems

11:10 – 12:10  *F. Schipper et al.*
Improving Nickel-Rich Layered Cathode Materials via a Doping Strategy: Zirconium-Doped LiNi_{0.6}Co_{0.2}Mn_{0.2}O_2

*S. Hildebrand*
Evaluating the Safety of Lithium-ion Battery Materials via Accelerating Rate Calorimetry

*A. Straková Fedorková et al.*
Preparation and Characterization of S-LFP-MWCNTs Cathode Composites

12:10  Time for Lunch
13:00 – 14:10

T. Kazda et. al.
Influence of the Annealing Temperature to the Properties of High Voltage Spinel Cathode

J. Libich et. al.
Rate Capability of Graphite Negative Electrode in Lithium-Ion cell

Supercapacitors

K. Wasiński et. al.
Sodium-ion Hybrid Capacitor Operating in Organic Electrolyte

L. Kolanowski et. al.
Modification of Carbon Material by Plasma Treatment and Its Application in Energy Storage

14:10

Coffee Break

14:20 – 15:20

G. Lota et. al.
Polysulphides Reversible Faradaic Reactions as Interesting Source of Pseudocapacitance

D. Pęziak-Kowalska et. al.
Oxidized Activated Carbons as Electrode Materials in Supercapacitor Application

Electrolytes for Aprotic Batteries and Accumulators

J. Vondrák et al.
Ionic Liquids in Electrochemical Power Sources

J. Máca et al.
Ionic Liquids as Electrolytes

15:20

Coffee Break

15:30 – 16:10

L. Hromadska
Mutual Influence of Electrolyte Composition and Electrode Density on Specific Capacitance of Activated Carbon-based Supercapacitors

J. Wojciechowski
The Influence of the Modification of Electrodes on the Electrochemical Capacitor Parameters

16:10

Poster Section

17:15

Social Evening
Tuesday, August 30th

The Other Modern Systems for Batteries

9:00 – 10:20  
G. Fafilek et al.  
Proof of Concept for a CO₂ Sensor in Water

P. Swoboda et al.  
Influence of Electrode Preparation Method on Performance of Negative Electrodes with Carbon-metal Alloy Composites

T. Binar et al.  
The Use of Nanotechnology at Storage of Transport Vehicles Engines

T. V. Doan et al.  
Mechanical and Tribological Behavior of 42CrMo₄ Steel Treated by Plasma Nitriding.

10:20  
Coffee Break

Aqueous Systems

10:30 – 11:30  
M. Baraniak et. al.  
Influence of Ionic Liquids Additives on Lead Acid Battery Corrosion

M. Graś et. al.  
PbO₂ as Electrode Material in Hybrid Electrochemical Capacitor

K. Kopczyński et. al.  
Influence of Ionic Liquid Additives on Lead-Acid Battery Working Parameters

11:30-11:40  
Coffee Break

11:40-12:20  
P. Mazúr et. al.  
Scale-up of Vanadium Redox Flow Battery for Use in Residential Houses

M. Świerczynski et. al.  
The Second Life Ageing of the NMC/C Electric Vehicle Retired Li-ion Batteries in the Stationary Applications

12:20  
Time for Lunch

13:20  
Poster Section
15:00  EXCURSION

17:30  Evening Meeting

Wednesday, August 31st

**Application of Batteries for Electromobility and Industry**

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<td>9:00</td>
<td><em>P. Prochážka et. al.</em></td>
<td>Li-ion Battery Deep Discharge Degradation</td>
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<td><em>K. Propp et. al.</em></td>
<td>Design, Build and Validation of a Low-Cost Programmable Battery Cycler</td>
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<td><em>P. Swoboda et al.</em></td>
<td>Large Energy Storage Systems for Renewable Power Sources</td>
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<tr>
<td>10:10</td>
<td><em>J. Marušinec</em></td>
<td>Types of Batteries in Present Electric Cars</td>
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<td><em>J. Kašpárek</em></td>
<td>Experimental Production of Li-Accumulators In Czechia</td>
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<td><em>J. Martis et. al.</em></td>
<td>Compact High-efficiency Li-Ion Fast-charger</td>
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<td>11:20</td>
<td><em>C. Caironi et. al.</em></td>
<td>Bio-Logic: General Company Presentation</td>
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<td><em>J. Kravec</em></td>
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12:00  Time for Lunch
13:00  Poster Section
14:00 – 17:00  FEEC Laboratories - UETE

15:00  City of Brno with guide

17:00  Closing Ceremony
List of Posters

**Section: 1. TECHNOLOGY AND APPLICATIONS**

R. Cipin, P. Prochazka, M. Toman, J. Martis, D. Cervinka
Automatic Li-ion Battery Measuring Stand

M. Lula, D. Waszak
Safety Testing of Large Energy Storage

T. Reichl, P. Hrzina
Impulse Diagnostic Test of Battery and Load Influence

P. Swoboda, D. Waszak, A. Sierczyńska, P. Bakiera
Large Energy Storage Systems for Renewable Power Sources

M. Toman, R. Cipin, D. Cervinka, P. Vorel, P. Prochazka
Li-ion Battery Charging Efficiency

P. Vorel, D. Cervinka, P. Prochazka, M. Toman, J. Martis
High Efficiency Fast-Chargers for Lead-Acid Batteries

**Section: 2. LITHIUM BATTERIES AND RELATED SYSTEMS**

O. Čech, T. Kazda, N. Pizurova, P. Čudek, M. Sedlaříková
Synthesis and Electrochemical Characterization of Monoclinic TiO$_2$(B) for Li-ion Cells

P. Čudek, T. Kazda, K. Jaššo
Influence of Compaction Pressure on Properties of Electrodes for Li-S Based Electrochemical Power Sources

M. O. Danilov, I. A. Rusetskii, I. A. Slobodyanyuk, G. Ya. Kolbasov
The Electrochemical Method of Synthesis Graphenes Materials for the Power Sources

T. Gottwald, J. Vondrák, M. Sedlaříková
MoS$_2$ as a Negative Electrode Material for SIB

M. Juračka, T. Gottwald, M. Sedlaříková, J. Vondrák
Lithium Sulfur Batteries

V. Knap, D.-I. Stroe, T. Zhang, E. Schaltz, R. Teodorescu, K. Propp
Significance of the Capacity Recovery Effect in Pouch Lithium-Sulfur Battery Cells

J. Libich, O. Čech, M. Sedlaříková, J. Vondrák, M. Kundu, J. Máca
Sodium-Titanate as Negative Electrode Material for Sodium-Ion batteries

Pulse Power Capability Estimation of Lithium Titanate Oxide-based Batteries

J. Tichý, T. Kazda, M. Sedlaříková, P. Čudek
High Voltage Materials for Lithium-Ion Accumulators

U. Tocoglu, M. Alaf, H. Akbulut
Carbon Coated Silicon Nanoparticles Embedded MWCNT/Graphene Matrix Anode Material for Li-Ion Batteries

M. Alaf, U. Tocoglu, H. Akbulut
In Situ Synthesis of SnO$_2$/Graphene Nanocomposite Anode and Its Enhanced Li-ion Battery Performance

P. Vyroubal, T. Kazda, J. Maxa
FEM Model of Lithium Ion Battery Temperature Field

Single Li-ion Cell Electrical Performance as Important Factor in Design of Stationary Energy Storage System

O. Čech, M. Sedlariková, T. Kazda, N. Pizurová, P. Čudek
Monoclinic TiO$_2$(B) for Li-ion Negative Electrodes

Section: 3. SUPERCAPACITORS

L. Soserov, T. Boyadzhieva, V. Koleva, A. Stoyanova, R. Stoyanova
The Capacitive Performance of Ni(OH)$_2$–Based Nanocomposites for Hybrid Supercapacitors

J. Wojciechowski, G. Lota, K. Szubert
The Influence of the Modification of Electrodes on the Electrochemical Capacitor Parameters

Section: 4. ELECTROLYTES FOR APROTIC BATTERIES

M. Jahn, M. Sedlariková, J. Vondrak, L. Parizek
Gel Polymer Electrolytes on Based MMA

V. Barbashov, E. Chayka, E. Nesova
Effect of Mechanical Load on the Ionic Conductivity in Zirconia

Section: 5. PHOTOVOLTAICS

N. Bentahar, H. Mimoun, G. Otmanine
Accumulators of Solar Energy for Telemetry of Hassi R'Mel Field

M. Frk, J. Hylsky, D. Strachala
Rheological Properties of Heat Transfer Liquids for Solar Thermal Systems

J. Hylsky, D. Strachala, J. Vanek
Temperature Influence on the PID Affected Photovoltaic Modules Regeneration

K. Jandova, J. Vanek
Diagnostic of The Solar Power Stations Servicelife Using of Thermovision

D. Strachala, J. Hylsky, M. Kadlec, M. Sionova, P. Čudek, J. Vanek
Degradation of Perovskite Solar Cell Based on CH$_3$NH$_3$PbI$_3$-2Cl$_2$ Structure

D. Strachala, M. Kadlec, M. Sionová, J. Hylský, M. Weiter, P., Čudek, J. Vaněk
Manufacturing of Perovskite Solar Cell Based on CH$_3$NH$_3$PbI$_3$-2Cl$_2$ Structure
J. Vaněk, I. Repko, J. Klima
Possibilities of Automatic Solar Modules Defect Detection by Thermovision

Section: 6. AQUEOUS SYSTEMS

P. Bakiera, A. Sierczyńska
Prototype of Ni-MH Battery Based on Metal Hydride Negative Electrodes with Metal-Carbon Composites

O. Čech, J. Zimakova, S. Vaculik, L. Chladil, P. Krivik, P. Bača
Composition of Positive Electrodes for Lead-acid Batteries Cured at Different Conditions: XRD Study

L. Chladil, O. Čech
Pulse Deposition of Zinc from Electrolytes with Reduced Zinc Oxide Solubility

P. Krivik
Temperature Changes During Pulse Charging of Lead Acid Battery in a Flooded State

P. Vyroubal, T. Kazda, P. Bača
FEM Model of Discharging of Lead Acid Battery

J. Zimáková, S. Vaculík, D. Fryda, P. Bača
Combined Effect of fiberglass and TiO2 in Negative Active Mass of Lead-acid Accumulator

V. Svoboda, P. Mazur, J. Pocedic, J. Dundalek, J. Vrana, J. Kosek
Screening of Quinone Derivatives for Aqueous Redox Flow Battery

Section: 7. OTHER SYSTEMS

J. Maxa, M. Bílek, P. Hlavatá
Comparison of Results Obtained Using Different Turbulence Models in Analysis Differentially Pumped Chamber

M. Bílek, P. Vyroubal, P. Hlavatá
Analysis of the Gas Flow in the Specimen Chamber of the Environmental Scanning Electron Microscope

M. H. Nobahari, A. N. Golikand
Study of Atomic Structure and Composition Characterization of Intermetallic “Pt3Co” Nanoparticles on MWCNT as Enhancing Electrocatalyst for Methanol Oxidation

J. Sukáč, J. Vondrák, T. Kazda
The Impact of Outer Climatic Conditions to Unexpected Financial Expenses for the Repairs

P. Vyroubal, T. Kazda, R. Bayer
Numerical Simulation of the Nail Test

A. Sikora, K. Adam, M. Varga, H. Rojacz, G. Fafilek
Voltammetric Study of Steel Corrosion at High Temperatures
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