



# ADVANCED BATTERY POWER 2017 PROGRAMM / AGENDA

# Agenda Day 1, March 29, 2017

## Advanced Battery Power / Kraftwerk Batterie

### 10:00 | Opening

Prof. Dr. Dirk Uwe Sauer, ISEA, RWTH Aachen University  
Dr. Peter Schroth, Bundesministerium für Bildung und Forschung (BMBF)

### 10:10 | Greetings

Prof. Dr. Werner Klaffke, Haus der Technik e.V.

### 10:20 | Plenary Talk 1

**Reflections on the Evolution of Metal Oxide Cathodes for Li-Ion Batteries**

Dr. Michael M. Thackeray, Argonne National Laboratory

### 11:05 | Plenary Talk 2

**Lithium-ion battery production in Germany – How it works, unique selling points**

Dr. Kai Jan Vuorilehto, EAS Germany GmbH

### 11:35 | Plenary Talk 3

**Key technique of Lithium Battery used in Rail Transit System**

Prof. Jiang Jiuchun, Beijing Jiaotong University

12:05 | Lunch Break with Poster Session and Exhibition

### 13:45 | Parallel Session 1

#### 1A: Battery Systems – Safety and Reliability

Location: Saal Brüssel

Session Chair: Dr. Jens Münnix (Audi)

#### 13:45 | Experiments to measure the gas ejection rate of large Li-ion batteries during thermal-runaway

DI Christiane Essl, Kompetenzzentrum - Das virtuelle Fahrzeug, Forschungsgesellschaft mbH

#### 14:05 | Crash and Crush Testing for xEV Batteries - Comparison of Test Standards and Validation Procedures

Dipl.-Ing. (FH) Alexander Stadler, TÜV SÜD Battery Testing GmbH

#### 14:25 | Battery safety analysis: a method for simulating the mechanical behavior of Li-Ionen cells

Dr. Bernhard Brunnsteiner, AVL List GmbH

#### 14:45 | Electric components for battery electric vehicles above 800 V

M.Sc. Fabian Luttenberger, AVL List GmbH

#### 15:05 | Adaptive control cooling system for a lithium-ion battery module

PhD Haritz Macicior, Ik4 Cidetec

1A

#### 1B: Automotive and Mobile Applications

Location: Europa-Saal

Session Chairs: Dr.-Ing. Eckhard Karden (Ford) and Prof. Dr. Hans-Georg Schweiger (TH Ingolstadt)

#### 13:45 | Fast charging of Li-ion batteries - optimized charging patterns for reduced ageing

Prof. Oliver Bohlen, Hochschule für angewandte Wissenschaften München

#### 14:05 | Progress in battery development - from the Opel Ampera to the Opel Ampera-e

Horst Mettlach, Adam Opel AG

#### 14:25 | Fast Top-up Charging of Lithium-ion Batteries - A comparative ageing study

Abdilbari Shifa Mussa, KTH Royal Institute of Technology

#### 14:45 | Recent trends in xEV battery pack requirements and associated solutions

Dr. Martin Jäger, FEV GmbH

#### 15:05 | High Temperature Water Loss Testing and Gassing Measurement on Automotive Lead-Acid Batteries

Jonathan Wirth, RWTH Aachen

1B

**1C: Lithium Ion Cells**

Location: Konferenzraum K1

Session Chairs: Dr. Jens Tübke (Fraunhofer ICT) and Prof. Dr. Rüdiger-A. Eichel (Forschungszentrum Jülich)

**13:45 | New method using floating currents for fast and high resolved measurement of Arrhenius relation and calendar life aging rate**

Meinert Lewerenz, Institut für Stromrichtertechnik und Elektrische Antriebe

**14:05 | Automated Large Scale Microscopy for Characterisation of Prismatic Li-Ion Cells Using Machine Learning Approaches**

Andreas Kopp, Hochschule Aalen

**14:25 | Thermal gradients in high power and high energy lithium-ion cells analysed by Electrothermal Impedance Spectroscopy (ETIS)**

Michael Dippon, Karlsruhe Institut of Technology (KIT)

**14:45 | Methods coupling experiments and modeling for the determination of interfacial, porous-electrode, and electrolyte properties**

Dr. Charles Delacourt, Laboratoire de Reactivite et de Chimie des Solides, CNRS UMR 7314

**15:05 | A Criterion to Predict Onset of Electric Short Circuit for Lithium-Ion Batteries Subjected to Mechanical Loads**

PhD Elham Sahraei, Massachusetts Institute of Technology, MIT, George Mason University

15:25 | Break with Poster Session and Exhibition

**16:15 | Submission of Votes for the „Poster Award 2017“****16:25 | Parallel Session 2****2A: Production and Recycling**

Location: Saal Brüssel

Session Chairs: Prof. Dr. Bernd Friedrich (RWTH Aachen) and Dr. Eberhard Meissner (Johnson Controls)

**16:25 | Connecting of various battery cells for electromobility by using laser micro welding**

M.Sc. Johanna Helm, Fraunhofer-Institut für Lasertechnik ILT

**16:45 | Sealing Components for Lithium Batteries - Serial Solutions & Outlook**

Dr. Peter Kritzer, Freudenberg Sealing Technologies

**17:05 | Drying of electrodes for lithium ion batteries with soluble and dispersed binder**

Christiane Schilcher, Technische Universität Braunschweig

**17:25 | The importance of proper electrolyte wetting of lithium-ion cells**

Christian Peter, Fraunhofer-Institut für Keramische Technologien und Systeme IKTS

**2B: Battery Systems – Diagnostics and Management**

Location: Europa-Saal

Session Chairs: Armin Warm (Ford) and Horst Mettlach (Opel)

**16:25 | Ageing dependent state of charge estimator for a NMC oxide based lithium-ion battery**

Dr. Michael Heck, Fraunhofer-Institut für Solare Energiesystem

**16:45 | Impedance-based temperature determination of Li-ion batteries unravelled by microreference electrodes in Li-ion batteries**

M.Sc. Luc Raijmakers, Delft University of Technology

**17:05 | Design of optimized current profiles for fast charging of lithium-ion batteries**

Marius Bauer, ZSW Baden-Württemberg

**17:25 | Performance estimation of a cell-to-cell-type active balancing circuit for lithium-ion battery systems**

Manuel Räber, Université de Haute Alsace

**17:45 | Considering battery degradation in the hybrid vehicle operation strategy to minimize total cost of ownership**

Shi Li, Institute for Combustion Engines, RWTH Aachen University

**2C: Lithium Ion Cells – Active and Inactive Components**

Location: Konferenzraum K1

Session Chairs: Dr. Thomas Waldmann (ZSW)

**16:25 | Challenges in Stabilizing Si-Alloy Anodes in Lithium-Ion-Batteries**

Prof. Dr. Egbert Figgemeier, Helmholtz-Institut Münster

**16:45 | A novel high-energy density Li-ion cell for low-temperature applications**

Prof. Filippos Farmakis, Micro- and Nanotechnology Laboratory, University of Thrace

**17:05 | Detailed Electrochemical and Spectroscopic Study on the Influence of Electrolyte Additives and Alumina Coatings on the Aging of LiNi<sub>0.4</sub>Mn<sub>1.6</sub>O<sub>4</sub> based Cathodes**

Dr. Stefanie Ostermeyer, VW-VM Forschungsgesellschaft mbH &amp; Co KG

**17:25 | Comparative study of imide-based lithium salts as electrolyte additives for Li-ion batteries**

Varvara Sharova, Helmholtz Institute Ulm / Karlsruhe Institute of Technology

**17:45 | Aqueous processing and additive development for high-voltage lithium-ion cathode**

Dr. Dominic Bresser, Karlsruher Institut für Technologie (KIT)

**19:00 | Evening Event****Poster Award / Follow-up Discussion**

Ludwig Forum, Jülicher Str. 97-109, 52070 Aachen

## Agenda Day 2, March 30, 2017

### Advanced Battery Power / Kraftwerk Batterie

**09:00 | Plenary Talk 1****Surprising Chemistry that takes place within Lithium Ion Cells**

Prof. Jeff Dahn, FRSC, Dalhousie University, NSERC/Tesla Canada

**09:45 | Plenary Talk 2****New double-layer capacitors with outstanding performance – technology and applications**

Dr. Ann Laheäär, Skeleton Technologies GmbH

**10:15 | Plenary Talk 3****State of research on battery recycling (Li batteries)**

Prof. Dr. Bernd Friedrich, RWTH Aachen University

**10:45 | Plenary Talk 4****Battery management systems for HV battery systems –success factors, challenges and future developments**

Chrysanthos Tzivanopoulos, Robert Bosch Battery Systems GmbH

11:15 | Lunch Break with Poster Session and Exhibition

**12:55 | Parallel Session 3****3A: Stationary Battery Systems**

Location: Saal Brüssel

Session Chair: Dr. Jochen Seier (Forschungszentrum Jülich)

**12:55 | Profitability of PV Home Storage Considering Battery Aging and an Electric Vehicle**

Thomas Kaschub, Karlsruher Institut für Technologie (KIT)

**13:15 | The economics of ESS: how to enhance income streams for energy storage in combination with CHP plants**

Prof. Rico Wojanowski, Hochschule Darmstadt

**13:35 | Home storage systems for FCR provision: Load profiles and battery performance**

Dr. Annika Kufner, Caterva GmbH

**13:55 | Minimising battery degradation in realistic stationary applications by integrated economic and electrochemical modelling**

Jorn Reniers, University of Oxford

**14:15 | Safety and ageing issues in lithium-ion home storage systems**

Dipl.-Ing. Stephan Lux, Fraunhofer Institute for Solar Energy Systems (ISE)

### 3B: Battery systems – Modeling

Location: Europa-Saal

Session Chairs: Prof. Charles Delacourt (Laboratoire de Réactivité et de Chimie des Solides) and Prof. Dr. Arno Kwade (Technische Universität Braunschweig)

- 12:55 | Modeling and simulation of high current scenarios for designing safe lithium-ion cells**  
Alexander Rheinfeld, Technische Universität München
- 13:15 | Gaussian process regression for forecasting battery state of health**  
Robert Richardson, University of Oxford
- 13:35 | Battery Core Temperature Prediction, including Parameters Estimation for Lithium-ion Pouch Cell Packs**  
M.Sc. Erik Hoedemaekers, TNO
- 13:55 | A non-linear model approach for separation and identification of processes in Lithium-ion batteries**  
M.Sc. Nicolas Wolff, Technische Universität Braunschweig
- 14:15 | Development and validation of electric vehicle battery equivalent model, SoC, SoF and SoH estimation algorithms**  
Dr. Mikel Oyarbide, Fundacion Cidetec

### 3C: Beyond and Beside Lithium Ion Technology

Location: Konferenzraum K1

Session Chairs: Prof. Dr. Jürgen Janek (Uni Gießen) and Prof. Dr. Petr Novák (ETH Zürich)

- 12:55 | Carbon-coated core-shell Li<sub>2</sub>S@C nanocomposites as high performance cathode material for Lithium-Sulfur batteries**  
Chunguang Chen, Forschungszentrum Juelich
- 13:15 | Comparative study of electrolyte additives for lithium metal in lithium-sulfur batteries**  
Dr. Marian Cristian Stan, MEET Batterieforschungszentrum / WWU Münster
- 13:35 | Improving performance of Li-S cells under cycling, a model-informed approach**  
Dr. Monica Marinescu, Imperial College London
- 13:55 | Effect of Cobalt metal complex on the chargeability of Lithium-Oxygen battery**  
Dr. Fanny Bardé, Toyota Motor Europe
- 14:15 | Sodium-Ion batteries - One step forward for the environment?**  
Dr. Jens Peters, Karlsruhe Institut für Technologie (KIT)

14:35 | Break with Poster Session and Exhibition

### 15:20 | Parallel Session 4

#### 4A: Markets

Location: Saal Brüssel

Session Chairs: Dr. Christian Hille (P3 Aachen) and Dr. Peter Weirich (Forschungszentrum Jülich)

- 15:20 | New approach for a comprehensive criticality evaluation of battery raw materials in the automotive industry**  
Lucas Philipp Weimer, RWTH Aachen University
- 15:40 | Influence of Battery Storages on the Market Price for Primary Control Reserve**  
Andreas Maaz, RWTH Aachen University
- 16:00 | Battery Electric Vehicles: Price Premium and Future Trends**  
Prof. Dr. Momo Safari, Hasselt University
- 16:20 | Ecologically Friendly Recycling of Lithium-Ion Batteries from Electric Vehicles**  
Jan Diekmann, Technische Universität Braunschweig
- 16:40 | Securing material supply for the lithium ion battery value chain**  
M.Sc. MBA Berend Loois, HiTech Materials Advisory

## 4B

### **4B: Battery Systems – Ageing and Parametrization**

Location: Europa-Saal

Session Chairs: Prof. Dr. Egbert Figgemeier (RWTH Aachen) and Dr. Matthias Ullrich (VW)

#### **15:20 | pAgeing: Ageing of Lithium-Ion Batteries in parallel Connection**

Markus Hofmann, Technische Universität München

#### **15:40 | Effect of load cycle on the lifetime evolution of a lithium ion battertion**

Marian Patrik Felder, TU Dortmund University

#### **16:00 | Understanding inhomogeneities in battery performance. The effect of thermal gradients on lithium iron phosphate and lithium sulfur batteries.**

Dr. Gregory Offer, Imperial College London

#### **16:20 | Simulation-based degradation analysis of PHEV lithium-ion batteries using a time-upscaling method**

Prof. Dr. habil. Wolfgang G. Bessler, Offenburg University of Applied Sciences

#### **16:40 | Full cell parametrization of a high-power lithium-ion battery for a physico-chemical model**

Johannes Schmalstieg, RWTH Aachen University

## 4C

### **4C: Lithium Ion Cells – Power and Energy Density, Advances in cell design**

Location: Konferenzraum K1

Session Chairs: Prof. Dr. Peter Birke (Uni Stuttgart) and Prof. Dr. Stefano Passerini (Helmholtz-Institut Ulm)

Authors: Dr. Martin Schuster, Prof. Dr. An Hardy, Dr. rer. nat. Thomas Waldmann, Jörn Wilhelm, M.Sc. Christian Weisenberger

#### **15:20 | Squeezing energy: The thrill of industrial battery development**

Dr. Armin Modlinger, Litarion GmbH

#### **15:40 | Towards solid state batteries: Materials and cell technology**

Prof. Dr. An Hardy, Hasselt University and imec – partner in energyville division imomec

#### **16:00 | Post-Mortem Analysis of aged commercial Li-ion Cells – Disassembly, Analysis Methods, and Selected Examples from the Lab**

Dr. rer. nat. Thomas Waldmann, Zentrum für Sonnenenergie- und Wasserstoff-Forschung Baden-Württemberg (ZSW)

#### **16:20 | Lithium gradients in graphite electrodes of aged lithium-ion batteries studied by colorimetry, XRD and coulombic efficiency measurements**

Jörn Wilhelm, Technische Universität München

#### **16:40 | On the Influence of High Operational Voltages on the Electrochemical Performance and Degradation of Lithium-Ion Batteries with Nickel-rich Mixed Layered Oxide-Cathodes**

M.Sc. Christian Weisenberger, Hochschule Aalen – Institut für Materialforschung Aalen

#### **17:00 | End of Conference**

#### **17:00 | Visit of ISEA – for participants only**

The ISEA – Institute for Power Electronics and Electrical Drives at RWTH Aachen University offers the participants of Battery Day NRW and the symposium “Advanced Battery Power” the possibility to visit the institute after the respective conference.

The transport to ISEA by bus will be organized. Up to 30 people can take part in each visit.

# POSTER SESSION

P1 | LITHIUM ION CELLS: MATERIALS AND IMPROVEMENTS ON PROPERTIES

P2 | BEYOND AND BESIDE LITHIUM-ION TECHNOLOGY

P3 | BATTERY SYSTEMS

P4 | AUTOMOTIVE AND MOBILE APPLICATIONS

P5 | STATIONARY BATTERY SYSTEMS

P6 | PRODUCTION AND RECYCLING OF BATTERY SYSTEMS AND CELLS

P7 | MARKETS

**Lithium ion cells: materials and improvements on properties**

- P1-01 Novel nitrile-based liquid electrolytes for safer lithium ion batteries  
Christian Krause, MEET – Münster Electrochemical Energy Technology, WWU Münster
- P1-02 Solid electrolyte interface as buffer and cage for fast charging of 6" processed Si microwire anodes  
M.Sc. Sandra Hansen, Kiel University
- P1-03 Lithium plating simulations in commercial Lithium-ion batteries during low-temperature charging  
Maria Angeles Cabanero Martínez, Fraunhofer ISC
- P1-04 New Insights into Pre-Lithiation Kinetics of Graphite via Nuclear Magnetic Resonance Spectroscopy  
Florian Holtstiege, MEET – Münster Electrochemical Energy Technology, WWU Münster
- P1-05 Systematic study of mixtures of ionic liquids, organic carbonates and conducting salts as electrolytes for lithium-ion cells  
Dr. Andreas Hofmann, Karlsruhe Institute of Technology (KIT)
- P1-06 Tin Nanoparticles as Anode Material for Lithium Ion Batteries  
Anke Düttmann, Universität Oldenburg
- P1-07 Metal-organic frameworks for rechargeable batteries  
Dr. Simon Dühnen, MEET – Münster Electrochemical Energy Technology, WWU Münster
- P1-08 Characterization of microstructural degradation effects in commercial graphite/NMC cells by computer tomography and scanning electron microscopy  
Dr. Ute Golla-Schindler, Hochschule Aalen
- P1-09 Advanced Electrolyte Formulations for High Voltage Lithium-Ion Batteries  
Ralf Wagner, University of Münster
- P1-10 Comparative Evaluation Study of Electrochemical Performance of Several Cathode Materials for Lithium Ion Batteries  
Dina Becker, MEET – Münster Electrochemical Energy Technology, WWU Münster
- P1-11 Optimizing the lithium ion battery high voltage cathode material  $\text{LiNi}_0.5\text{Mn}_{1.5}\text{O}_4$  synthesized using different precursor chemistries and calcination parameters  
Matthias Seidel, Fraunhofer ITKS
- P1-12 Carbon-Silicon Composite Anodes for Next Generation Lithium Ion Batteries  
Dr. Christian Schreiner, SGL Carbon GmbH
- P1-13 Active surface area measurements of electrodes for lithium-ion batteries  
Jan Bernd Habedank, Technische Universität München
- P1-14 Study of the Solid Electrolyte Interphase on silicon model electrodes  
Roman Nölle, MEET – Münster Electrochemical Energy Technology, WWU Münster
- P1-16 Electrochemical similarities and differences of LPCVD deposited Silicon compared to Silicon Nanoparticles in Lithium Ion Batteries  
M.Sc. Kathleen Nimmrich, Fritz-Haber-Institut der Max-Planck-Gesellschaft
- P1-17 Multi-functional Intelligent Battery Cells  
Dr. Wilhelm Maurer, Infineon Technologies AG
- P1-18 Physico-chemical properties and optimization of lithium bis(fluorosulfonyl)imide (LiFSI)-based carbonate electrolyte solutions  
Dipl.-Ing. Johannes Neuhaus, University of Kaiserslautern
- P1-19 Epoxy-based binders for lithium-ion batteries manufactured from renewable materials  
Maja Kandula, Technische Universität Braunschweig
- P1-20 Electrochemical Investigation of Compositional Effects in Silicon-Composite Materials  
Christopher Heim, Deutsches Zentrum für Luft- und Raumfahrt
- P1-21 Cyclotriphosphazenes as bifunctional additives for lithium ion battery electrolytes,  
Ivan Glogovac, MEET – Münster Electrochemical Energy Technology, WWU Münster
- P1-22 Investigation of new additives for nickel-rich cathode materials to improve the cycling stability in lithium on batteries.  
Sven Klein, MEET – Münster Electrochemical Energy Technology, WWU Münster



- P1-23 The real impact of LiPF<sub>6</sub>/organic carbonate-based electrolyte oxidation at elevated electrode potentials  
Johannes Kasnatscheew, University of Münster
- P1-24 Lifetime Analysis of Lithium-Ion Batteries by OCV-curve Measurements and Impedance Spectroscopy  
Michael Weiss, Karlsruhe Institute of Technology (KIT)
- P1-26 Hydrogenated Amorphous Silicon Nanoparticles as Anode Material for Lithium-Ion Batteries  
Andrew Paolo Cádiz Bedini, IEK-5: Photovoltaics / Forschungszentrum Jülich GmbH
- P1-27 Carbonate-based gel polymers: Investigation of electrochemical and thermal properties for use as future safe electrolytes in lithium ion batteries  
Anna Gerlitz, Helmholtz Institute Münster
- P1-28 Morphology changes of a Li-rich-NMC battery cathode material due to calendaring and aging  
M.Sc. Daria Zeibig, Aalen University
- P1-29 Influence of the design of high-energy-density graphite negative electrodes on the electrochemical performance  
Simon Malifarge, Laboratoire de réactivité et chimie des solides
- P1-30 Influence of Aging on the Thermal Stability of Layered and Spinel-Type Cathode Materials  
Markus Börner, MEET – Münster Electrochemical Energy Technology, WWU Münster
- P1-31 Roll-to-Roll Deposition of Columnar Silicon Layers on Copper Foil As Thin Film Anodes  
Steffen Straach, Fraunhofer-Institut für Organische Elektronik, Elektronenstrahl- und Plasmatechnik (FEP)
- P1-32 Anionic redox in Li-rich layered oxide cathodes: from fundamentals to applications by comparing 'model' vs. practical materials  
Gaurav Assat, Collège de France
- P1-34 Aqueous electrode formulation at MEET - Recipe development and transfer to the pilot plant scale  
Tobias Gallasch, Westfälische Wilhelms-Universität Münster, MEET Battery Research Center
- P1-35 Electrode resolved EIS characterization of commercial lithium-ion batteries by means of the method of the 'distribution of relaxation times' (DRT)  
Dr. Tom Patrick Heins, Technische Universität Braunschweig
- P1-36 Ball-milled Silicon - particle size impact on degradation of Si-C Anodes  
Christine Nowak, TU Braunschweig, Institut für Partikeltechnik
- P1-37 Systematic study of tin-based intermetallics as novel anode materials for lithium ion batteries  
Olga Joos, MEET – Münster Electrochemical Energy Technology, WWU Münster
- P1-38 Determination of heat capacities of cathode materials and calorimetry on coin cells with a DSC-like Battery Calorimeter for Lithium-Ion Batteries  
Dr. David Henriques, Hochschule Mannheim
- P1-39 Non-Stoichiometric Amorphous Silicon Nitride as Anode Material for Li-Ion Batteries  
Martin Kirkengen, Institute for Energy Technology (IFE) & University of Oslo
- P1-40 Silicon Deposited by Low Pressure Chemical Vapour Deposition on Carbonaceous Materials for Lithium Ion Batteries  
M.Sc. Kathleen Nimmrich, Fritz-Haber-Institut der Max-Planck-Gesellschaft
- P1-42 Fast and reliable parameter estimation method for a physic-chemical model  
Izaro Laresgoiti, Ik4-CIDETEC
- P1-43 Development of operational strategies for lithium ion batteries to guarantee a safe and lifetime optimized performance  
Dr. Andreas Dreizler, Deutsches Zentrum für Luft- und Raumfahrt e. V. (DLR)
- P1-44 An 'Industrie 4.0' approach for the accelerated development of new molecular materials for improved electrochemical energy storage devices  
Prof. Dr. Martin Korth, Ulm University
- P1-45 Using FIB-SEM images to determine the structure of Graphite Anodes and NMC Cathodes  
Fabian Frie, ISEA – Institute for Power Electronics and Electrical Drives at RWTH Aachen University

**Beyond and beside lithium-ion technology**

- P2-01 Nickel/sulfur composite electroplated nickel foams for the use as 3D cathode in lithium/sulfur batteries - a proof of concept  
Dr. Seniz Sörgel, Research Institute for Precious Metals and Metals Chemistry (fem)
- P2-03 Correlation of supercap electrode surface parameters and electrical performance  
Julian Marscheider, Technische Universität Berlin
- P2-04 Highly Stable Carbon-Free Cathodes for Li-Air Batteries with Aqueous Alkaline Electrolyte: Electrochemical and Structural Investigations  
Dr. Dennis Wittmaier, Deutsches Zentrum für Luft- und Raumfahrt
- P2-05 The Role of Anions in Lithium- Oxygen Battery Electrolytes  
MSc. Eng Merve ILIKSU, RWTH Aachen University
- P2-06 FastStorageBW - Development of a high power hybrid energy storage cell  
Peter Kitzler, Fraunhofer Institut für Produktionstechnik und Automatisierung (IPA)
- P2-07 TiO<sub>2</sub>/graphene Nanocomposites as High-Performance Anode Materials for Sodium-Ion Batteries  
Dr. Lisong Xiao, Institute for Combustion and Gas Dynamics – Reactive Fluids (IVG), University of Duisburg-Essen
- P2-08 Advanced anodes for high energy density lithium ion and lithium sulfur batteries  
Markus Piwko, Fraunhofer Institut für Werkstoff- und Strahltechnik IWS Dresden
- P2-09 Nickel/sulfur composite electroplated cathodes for the use in lithium/sulfur cells  
Prof. Dr. Timo Sörgel, Aalen University
- P2-10 Improving the electrochemical performance of lithium-metal systems by lithium surface modification  
Jens Becking, MEET – Münster Electrochemical Energy Technology, WWU Münster
- P2-11 Trifluoroalkyl substituted N-heterocyclic lithium salts: An investigative study of property-structure relationships  
Dipl.-Chem. Mariano Grünebaum, Forschungszentrum Jülich GmbH
- P2-12 Comparison of Lithium and Magnesium Polysulfides in Different Solvents  
Dr. Kirsi Jalkanen, MEET – Münster Electrochemical Energy Technology, WWU Münster
- P2-14 Preserve higher capacities by adjusted manufacturing processes for lithium-sulfur cathodes  
Paul Titscher, TU Braunschweig
- P2-16 Two-dimensional multiphysics simulation of Li-air button cells for electrolyte choice and electrode design  
Dr. Manik Mayur, Offenburg University of Applied Sciences
- P2-19 Ionic liquid/water mixtures as a potential path towards secondary zinc/air batteries  
Martin Bayer, University of Münster
- P2-20 Scandium-Substituted Na<sub>3</sub>Zr<sub>2</sub>(SiO<sub>4</sub>)<sub>2</sub>(PO<sub>4</sub>) as Superior Sodium-Ion Conductors  
Dr. Frank Tietz, Forschungszentrum Jülich GmbH
- P2-21 Production and characterization of bi-functional cathodes for secondary zinc-air batteries  
Alexander Kube, German Aerospace Center
- P2-22 Parameter identification for a physic-chemical battery model via electrochemical impedance spectroscopy  
Christiane Rahe, ISEA – Institute for Power Electronics and Electrical Drives at RWTH Aachen University

## Battery systems

- P3-01 In situ equipment condition monitoring of lithium-ion-cells by novel fiber optic sensor systems  
Alexander Gräfenstein, Fraunhofer Institute for Manufacturing Technology and Advanced Materials IFAM
- P3-02 State of charge estimation of lithium sulphur batteries using a combination of current integration and in-situ impedance spectroscopy  
Erik Berendes, Fraunhofer-Institute for Transportation and Infrastructure Systems IVI
- P3-03 Investigation Influence of Phase Change Material on Reaction of Lithium-Ion Cells to Abusive Conditions  
Hartmut Popp, AIT Austrian Institute of Technology
- P3-04 A Novel Test Circuit for Investigating the Influence of Fast Switching Currents on Lithium-Ion-Battery Ageing  
Pablo Korth Pereira Ferraz, Technische Universität Berlin
- P3-05 A High Frequency Model for Investigating the Influence of Fast Switching Currents on Lithium-Ion-Battery Ageing  
Pablo Korth Pereira Ferraz, Technische Universität Berlin
- P3-06 Comparison of frequency and time domain modelling of lithium ion batteries using fractional calculus  
Marcel Franke, Technische Universität Berlin
- P3-07 Sustainability Assessment of Second Life Application of Automotive Batteries (SASLAB): Preliminary results on ageing of Li-ion cells in automotive applications and power grid support  
Andreas Podias, European Commission
- P3-08 Investigation of the Applicability of Batteries for Aeronautical Applications - A Quantitative Reliability Approach  
Philipp Berg, Technical University of Munich (TUM)
- P3-09 Interdependencies of cell chemistry, SOC and temperature on the electrochemical impedance spectroscopy  
Prof. Robin Vanhaelst, Ostfalia, Hochschule für angewandte Wissenschaften, Campus Wolfsburg
- P3-11 Definition and Design of the Mechanical Constraints of a Contact System for Automotive Traction Batteries  
Marcus Kurrle, Bertrandt Technologie GmbH
- P3-12 Simulation-assisted design of thermal management of Automotive Li-ion cells based on highly detailed geometry variations  
Dominic J. Becker, Karlsruhe Institute of Technology (KIT)
- P3-13 Analysis of the calendar degradation of commercial high power NCA Li-ion pouch cells  
Sabine Paarmann, Karlsruhe Institute of Technology (KIT)
- P3-14 Simulation of the multi-physical transport processes in characteristic anode structures of Li-ion cells  
Philipp Seegert, Karlsruhe Institute of Technology (KIT)
- P3-15 Thermal Runaway of Lithium-Ion Cells - Comparison of Experiments and Simulations  
Dr. Carlos Ziebert, Karlsruhe Institute of Technology (KIT)
- P3-16 Li-Ion Battery Cell Thickness Change Hysteresis and Link to Aging Behavior  
Lukas Gold, Fraunhofer Institute for Silicate Research ISC
- P3-17 Influence of different phase change materials on thermal aging of lithium-ion cells  
Dipl.-Ing. Dr. Gerwin Drexler-Schmid, Austrian Institute of Technology
- P3-19 Battery lifetime prediction for different technologies based on stress characterization and aging experiments  
Maik Naumann, Technische Universität München
- P3-20 Cell-to-cell active balancing battery management system for 2nd life applications  
Manuel Räber, ZHAW
- P3-21 Validation of Battery Management Systems using Hardware-in-the-Loop Methods and Real-Time Battery Models.  
Hendrik Zappen, ISEA – Institute for Power Electronics and Electrical Drives at RWTH Aachen University
- P3-22 Impedance spectroscopy from electrode to cell level: A model-based reconstruction methodology to assign electrical and electrochemical loss processes in commercial lithium-ion cells  
Stefan Schindler, Helmholtz-Institut Ulm

- P3-23 Parametrization within a Thermal Simulation of Li-Ion Batteries Utilizing Mission Profiles  
M.Sc. Ziyi Wu, FH Aachen / RWTH Aachen
- P3-24 Advanced over-current protection with triggered fuses  
Mitja Koprivšek, ETI Elektroelement d.d.
- P3-25 Understanding Ageing Mechanisms in Li-ion Batteries using Entropy Spectroscopy and Incremental Capacity Analysis  
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- P3-26 Modelling the impact of cell internal parameters on cell-to-cell variations of commercial LiFePO<sub>4</sub>-graphite cells  
Katharina Rumpf, Technical University of Munich (TUM)
- P3-28 Benchmark of Battery Storage Topologies in Cost, Efficiency and Safety  
Marco Steinhardt, Technische Universität München
- P3-29 An in-depth view into the Tesla Model S module Part one: Single cell testing and modelling  
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- P3-30 Semi-Empirical Thermal FEM-Modeling of Cylindrical Li-ion Batteries and the Effect of FEM-Geometry  
M.Sc. Elisabeth Irene Kolp, Technical University of Munich (TUM)
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M.Sc. Johannes Sturm, Technical University of Munich (TUM)
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Tony Delaplagne, French Alternative Energies and Atomic Energy Commission
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Peter Keil, Technical University of Munich (TUM)
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Matthias Kuipers, Helmholtz-Institut Münster, Forschungszentrum Jülich GmbH
- P3-37 Robust Parameter Estimation of multiple cells in series connection  
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Mirosław Marczyk, FuelCon AG
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Susanne Lehner, ISEA – Institute for Power Electronics and Electrical Drives at RWTH Aachen University

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Dipl. - Ing. Helge Mohr, Quarzwerke GmbH
- P4-03 EV as a grid element and its battery allowing cheaply to overcome heavy problems of urban traffic  
David Judbarovski, retired engineer
- P4-04 Vibration Analysis of an SLI Battery using FEM Simulation  
Dr.-Ing. Ornwasa Traisigkhachol, Johnson Controls Autobatterien GmbH
- P4-05 System Simulation of Electric Hybrid Heavy-Duty Trucks powered from Catenary, Battery and Diesel  
M.Sc. Ivan Mareev, ISEA – Institute for Power Electronics and Electrical Drives at RWTH Aachen University
- P4-06 Advanced Lead batteries: still in the running for 48 Volt mild-hybrids and energy storage applications?  
Dr. Boris Monahov, ALABC
- P4-07 Challenges of integration of the large format battery technology EMBATT in future automotive platforms  
Sebastian Rückert, IAV GmbH
- P4-10 Model Reduction of a Physico-Chemical Porous Electrode Model for Realtime Applications  
Heiko Witzhausen, ISEA – Institute for Power Electronics and Electrical Drives at RWTH Aachen University
- P4-11 Introduction of Battery-Electric Buses in European Cities  
Fabian Meishner, ISEA – Institute for Power Electronics and Electrical Drives at RWTH Aachen University
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M.Sc. Roland Uerlich, TU Braunschweig
- P4-15 Advanced Battery Thermal Management for Increased Energy Efficiency of Electric Vehicles - Results from the EU-Funded Project 'OPTEMUS'  
Dipl.-Ing. Gero Mimberg, Institut für Kraftfahrzeuge, RWTH Aachen University
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Thomas Nemeth, RWTH Aachen University
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Bernhard Schwarz, Karlsruher Institut für Technologie (KIT)
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Deepranjan Dongol, Offenburg University of Applied Sciences, Offenburg, Germany
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Dr. Leong Kit Gan, University of Oxford
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Dr. Kerstin Sann, VDE e.V.

- P5-10 Size reduction of battery energy storage systems for PV plants power ramp rate control  
Aitor Makibar, Polytechnic University of Madrid UPM
- P5-11 PV Plants ramp rate control algorithm for reduced size Li-Ion battery  
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Sebastian Wagner, Digital Energy Solutions GmbH & Co. KG
- P5-14 VirtualBattery - Benchmark of PV battery inverters  
Dominik Schledde, Fraunhofer-institut für Winenergie und Energiesystemtechnik (IWES)

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- P6-03 Gripping-tool for lithium-ion battery cells with integrated testing functionality  
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- P6-04 Contacting of cylindrical lithium-ion cells using pulsed laser radiation  
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- P6-05 Laser cutting: Impact of active material particles and metal spatter on cycle stability  
Sven Hartwig, Institut für Füge- und Schweißtechnik, TU Braunschweig
- P6-06 Intermittent Slot Die Coating for Lithium-Ion-Battery-Applications  
Ralf Diehm, Karlsruher Institut für Technologie (KIT)
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Till Günther, Technische Universität München
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Chris Meyer, TU Braunschweig
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Dr. Heinz Kieburg, Laser-Mikrotechnologie Dr. Kieburg GmbH
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Joscha Schnell, Technical University of Munich (TUM)
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Christoph Lienemann, PEM der RWTH Aachen University
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Artem Turetsky, Institut für Werkzeugmaschinen und Fertigungstechnik, Technische Universität Braunschweig

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Ruben Leithoff, Institute of Maschine Tools and Production Technology, TU Braunschweig
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M.Sc. Nicolas Bognar, TU Braunschweig
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Oliver Krätzig, Forschungszentrum Jülich GmbH, Helmholtz-Institut Münster (IEK-12)
- P7-02 Scenarios for battery and component costs  
Ansgar vom Hemdt, RWTH Aachen

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