Keynote Speakers

Lew Fulton, UC Davis

Battery electric and hydrogen vehicles – technology progress, cost reduction, and prospects in California

Abstract:

This talk will cover the mentioned technologies across a range of vehicle types, the evolution of these technologies and their costs into the future, and their prospects in California. The policy landscape in this state is complex but may result in adoption of ZEVs (especially trucks) faster than in any other location in the world over the next 10 years, as California attempts rapid decarbonization heading for carbon neutrality by 2045. The implications of all this in terms of vehicle sales, stock turnover, and costs will also be considered. Recent UC Davis analysis will be featured.

Short bio:

Lewis Fulton has worked internationally in the field of transport/energy/environment analysis and policy development for 30 years. He is Director of the Sustainable Transportation Energy Pathways (STEPS+) program within the Institute of Transportation Studies at the University of California, Davis. There he leads a range of research activities around new vehicle technologies and new fuels. He was a lead author on the recent IPCC 5th Assessment Report, Mitigation ("Climate Change 2014: Mitigation of Climate Change", transport chapter). Current projects include analyses of electric vehicles, shared mobility, automation, and other drivers of transportation futures. He investigates the costs, energy, GHG, employment and other aspects of changing transportation trends and alternative futures.

From 2007-2012 he was a Senior Transport Specialist with the International Energy Agency, Paris, as well as Division Head for Energy Technology Policy during 2011-2012. He returned to the IEA in 2007 after working there originally from 1999-2005. At the IEA Lew led the development of the Mobility Model and directed transport-related analysis connected with the Energy Technology Perspectives series of publications. During 2006-2007 he worked in Kenya with the UN Environment Program, developing and implementing GEF-funded sustainable transport projects around the world. During the 1990s he also worked at the US Department of Energy for 4 years, and taught at the Independent University of Bangladesh and the University of Maryland.

Lew received his Ph.D. in Energy Management and Environmental Policy from the University of Pennsylvania in the United States in 1994.

Daniel Brandell, Uppsala University

Polyesters as next-generation solid electrolytes for Li- and Na-batteries

Abstract:

The macromolecular platform of polyesters address several of the key requirements for implementation of a safe electrolyte system that can be implemented in high capacity and high voltage cells. As compared to the dominating polyethers, these materials can be chemically tailored during striaght-forward synthesis routes. This opens up new possibilities for mitigating dendrite formation, generating interfacial compatibility with a range of electrode materials, and provide mechanical and electrochemical stable solid polymer electrolytes systems.

Short bio:

Daniel Brandell (born 1975, PhD 2005) is Professor in Materials Chemistry at Uppsala University, Sweden, where he is a member of the Ångström Advanced Battery Centre. He is thematic leader for energy storage within the Swedish Electromobility Center and a coordinator of Batteries Sweden. He is most well-known for his research on polymer electrolytes, which he studies using combinations of experimental and computational techniques. For these activities, he has a ERC Consolidator Grant.

Tom Smolinka, Fraunhofer ISE

Strategies for cost reduction beyond the membrane electrode assemblies

Abstract:

With approx. 40 to 50 % the stack in a PEM-electrolysis system has the highest cost share of the total system. At the cell level, the membrane electrode assembly is the main focus of current efforts to reduce costs, increase efficiency and extend life-time. However, the costs and also the performance of a PEM electrolysis cell are also significantly influenced by the porous transport layers and the cell design used. In this presentation these aspects will be highlighted and strategies for cost reduction will be named.

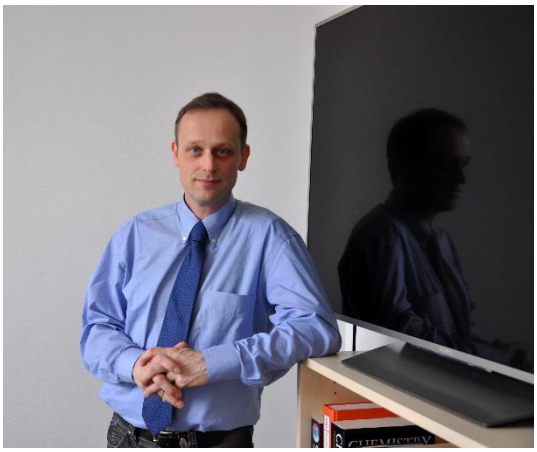
Short bio:

Tom Smolinka has studied energy and process engineering at the Technical University of Berlin/Germany with focus on energy conversion, heat transfer and power plants. He received his diploma in 2000. Since then he works at the Fraunhofer Institute for Solar Energy Systems ISE in Freiburg/Germany in the business division 'Hydrogen Technologies'. Starting with electrochemical characterization of electrodes in PEM fuel cells poisoned by CO and CO_2 and fuel cell stack development he received his PhD degree from the University of Ulm in 2005. Subsequently, he managed for three years the team 'Electrolysis' and established in 2008 the group 'Alternative Hydrogen Production' at the Fraunhofer Institute. In the last years he built up the department "Chemical Energy Storage" which performs research and development in the fields of PEM water electrolysis, solar hydrogen production, power to gas and redox flow batteries. He is co-author of several studies on hydrogen technologies, electrical energy storage and hydrogen production by water electrolysis.

Egbert Figgemeier, RWTH Aachen

State of the Art of Silicon in Commercial Lithium Ion Batteries Cells and Perspectives on Higher Silicon Loadings Enabled by Electrolyte Additives

Abstract:



Silicon plays a prominent role in boosting the capacity of lithium ion batteries, which is reflected by the fact that commercial 18650 cells already contain electrodes made of silicon/graphite blends. The presentation will give an overview of the current state-of-the-art of silicon in commercial cells and how it effects the mechanical and related ageing properties in lithium ion battery cells. Moreover, results of experimental cells with high loadings of silicon and innovative enabling electrolyte additives will be presented in conjunction with further mitigating strategies for stabilizing high-loading Si-anodes.

Short bio:

Prof Figgemeier studied chemistry and did his PhD at the University of Paderborn. This was followed by academic research at the Universities of Dublin, Basel and Uppsala. In 2007 he joined Bayer Technology Services heading the materials and corrosion lab as well as the development of materials for battery applications. From 2012 on, he worked as application development engineer for battery materials at 3M Deutschland responsible for technical support of customers in Germany and Europe. Since 2016 he is group leader at the Helmholtz Institute Münster (section Aachen) and he holds the chair for “Ageing and Reliability of Batteries” at the RWTH Aachen University.

Program at a Glance

Day 1: Monday 21 September 2020	
09:00	Welcome
09:10	**Session 1: RA4 – Policy & Techno-economic Analysis**
10:45	**Poster Session I**
11:15	Lunch Break
13:00	**Session 2: RA1 - Batteries**
14:30	Summary & Discussion
15:00	**End of Day 1**

Day 2: Tuesday 22 September 2020	
09:00	**Session 3: RA2 – Hydrogen**
10:40	**Poster Session II**
11:10	Lunch Break
13:00	**Session 4: RA3 – Systems & Applications**
14:30	Summary & Discussion
15:00	**End of Day 2**

Day 3: Wednesday 23 September 2020	
09:00	**MoZEES Battery Innovation Activities**
11:00	Lunch Break
13:00	**MoZEES Hydrogen Innovation Activities**
14:30	Closing Remarks
15:00	**End of Day 3**

MoZEES
Mobility Zero Emission Energy Systems

MoZEES Annual Meeting 2020
21-23 September 2020
Keynote Speakers

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toi Institute of Transport Economics
Norwegian Centre for Transport Research
FFI Forsvarets forskningsinstitutt
Norwegian Defence Research Establishment
USN University of South-Eastern Norway
IFE Institute for Energy Technology
NTNU Norwegian University of Science and Technology
SINTEF
UiO : University of Oslo

UPPSALA UNIVERSITET
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