Johan Hjelm - DTU Orbit (14/05/2019)

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Research outputs:

Complementary analyses of aging in a commercial LiFePO4/graphite 26650 cell
Research output: Contribution to journal › Journal article – Annual report year: 2018 › Research › peer-review

Research output: Contribution to journal › Comment/debate – Annual report year: 2018 › Communication

Electrochemical impedance of an alkaline organic flow battery
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2018 › Research › peer-review

Noise Phenomena in Electrochemical Impedance Spectroscopy of Polymer Electrolyte Membrane Electrolysis Cells
Research output: Contribution to journal › Journal article – Annual report year: 2018 › Research › peer-review

Reactivating the Ni-YSZ electrode in solid oxide cells and stacks by infiltration
Research output: Contribution to journal › Journal article – Annual report year: 2018 › Research › peer-review

Durable fuel electrode
Research output: Patent › Patent – Annual report year: 2017 › Research

A Physically-Based Equivalent Circuit Model for the Impedance of a LiFePO4/Graphite 26650 Cylindrical Cell
Research output: Contribution to journal › Journal article – Annual report year: 2017 › Research › peer-review

Carbon deposition and sulfur poisoning during CO2 electrolysis in nickel-based solid oxide cell electrodes
Research output: Contribution to journal › Journal article – Annual report year: 2017 › Research › peer-review

Challenges and Possibilities of EIS on PEMEC
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2017 › Research › peer-review

Chemical and Electrochemical Properties of La0.58Sr0.4Fe0.8Co0.2O3-δ (LSCF) Thin Films upon Oxygen Reduction and Evolution Reactions
Research output: Contribution to conference › Conference abstract for conference – Annual report year: 2017 › Research › peer-review
Chemical and Electrochemical Properties of $\text{La}_{0.58}\text{Sr}_{0.4}\text{Fe}_{0.8}\text{Co}_{0.2}\text{O}_3-\delta$ (LSCF) Thin Films upon Oxygen Reduction and Evolution Reactions
Research output: Contribution to journal › Conference abstract in journal – Annual report year: 2017 › Research › peer-review

Determination of the bonding strength in solid oxide fuel cells' interfaces by Schwickerath crack initiation test
Research output: Contribution to journal › Journal article – Annual report year: 2017 › Research › peer-review

Electrochemical Characterization of a PEMEC Using Impedance Spectroscopy
Research output: Contribution to journal › Journal article – Annual report year: 2017 › Research › peer-review

An Ag based brazing system with a tunable thermal expansion for the use as sealant for solid oxide cells
Research output: Contribution to journal › Journal article – Annual report year: 2016 › Research › peer-review

An Electrochemical Impedance Spectroscopy Study on the Effects of the Surface- and Solution-Based Mechanisms in Li-O$_2$ Cells
Research output: Contribution to journal › Journal article – Annual report year: 2016 › Research › peer-review

An Electrochemical Impedance Study of the Capacity Limitations in Na–O$_2$ Cells
Research output: Contribution to journal › Journal article – Annual report year: 2016 › Research › peer-review

Electrochemical Characterization of PEMECs Operating at Various Current Densities
Research output: Contribution to journal › Conference abstract in journal – Annual report year: 2016 › Research › peer-review

Electrochemical Impedance Spectroscopy on Industrially-Relevant Solid Oxide Electrolyzer Cell Stacks: A Powerful Tool for in-Situ Investigations of Degradation Mechanisms
Research output: Contribution to journal › Conference abstract in journal – Annual report year: 2016 › Research › peer-review

Electron microscopy investigations of changes in morphology and conductivity of LiFePO$_4$/C electrodes
Research output: Contribution to journal › Journal article – Annual report year: 2016 › Research › peer-review

Investigation of the bonding strength and bonding mechanisms of SOFCs interconnector-electrode interfaces
Research output: Contribution to journal › Journal article – Annual report year: 2016 › Research › peer-review

Kinetic Studies on State of the Art Solid Oxide Cells: A Comparison between Hydrogen/Steam and Reformate Fuels
Research output: Contribution to journal › Journal article – Annual report year: 2016 › Research › peer-review

Quantitative review of degradation and lifetime of solid oxide cells and stacks
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2016 › Research › peer-review

Analysis of the Interphase on Carbon Black Formed in High Voltage Batteries
Research output: Contribution to journal › Journal article – Annual report year: 2015 › Research › peer-review

Analysis of the Interphase on Carbon Black Formed in High Voltage Batteries
Research output: Contribution to conference › Conference abstract for conference – Annual report year: 2015 › Research › peer-review

An Electrochemical Impedance Spectroscopy Investigation of the Overpotentials in Li–O$_2$ Batteries
Research output: Contribution to journal › Journal article – Annual report year: 2015 › Research › peer-review
A Study of \( e^- \) Transport through Li\(_2\)O\(_2\), the Main Discharge Product in the Li-O\(_2\) Battery
Research output: Contribution to journal › Conference abstract in journal – Annual report year: 2015 › Research › peer-review

Carbon Deposition during CO\(_2\) Electrolysis in Ni-Based Solid-Oxide-Cell Electrodes
Research output: Contribution to journal › Conference abstract in journal – Annual report year: 2015 › Research › peer-review

Carbon Deposition during CO\(_2\) Electrolysis in Ni-Based Solid-Oxide-Cell Electrodes
Research output: Contribution to journal › Conference article – Annual report year: 2015 › Research › peer-review

Degradation Studies on LiFePO\(_4\) cathode
Research output: Contribution to journal › Conference article – Annual report year: 2015 › Research › peer-review

Electrochemical Impedance Spectroscopy as a Tool for PEMECs Development
Research output: Chapter in Book/Report/Conference proceeding › Conference abstract in proceedings – Annual report year: 2015 › Research › peer-review

Enhancement of the chemical stability in confined \( \delta \)-Bi\(_2\)O\(_3\)
Research output: Contribution to journal › Letter – Annual report year: 2015 › Research › peer-review

Fabrication of thin yttria-stabilized-zirconia dense electrolyte layers by inkjet printing for high performing solid oxide fuel cells
Research output: Contribution to journal › Journal article – Annual report year: 2015 › Research › peer-review

Influence of hydroxyl content of binders on rheological properties of cerium-gadolinium oxide (CGO) screen printing inks
Research output: Contribution to journal › Journal article – Annual report year: 2014 › Research › peer-review

Kinetic Studies on Ni-YSZ Composite Electrodes
Research output: Contribution to journal › Conference abstract in journal – Annual report year: 2015 › Research › peer-review

Kinetic Studies on Ni-YSZ Composite Electrodes
Research output: Contribution to journal › Conference article – Annual report year: 2016 › Research › peer-review

Kinetic Studies on State of the Art Solid Oxide Cells – A Comparison between Hydrogen/Steam and Reformate Fuels
Research output: Contribution to journal › Conference article – Annual report year: 2015 › Research › peer-review

Low-voltage FIB/SEM Tomography for 3D Microstructure Evolution of LiFePO\(_4\)/C Electrode
Research output: Contribution to journal › Conference abstract in journal – Annual report year: 2015 › Research › peer-review

Low-voltage FIB/SEM Tomography for 3D Microstructure Evolution of LiFePO\(_4\)/C Electrode
Research output: Contribution to journal › Conference article – Annual report year: 2016 › Research › peer-review

Reactions and SEI Formation during Charging of Li\(_2\)O\(_2\) Cells
Research output: Contribution to journal › Journal article – Annual report year: 2015 › Research › peer-review

Redox Probing Study of the Potential Dependence of Charge Transport Through Li\(_2\)O\(_2\)
Research output: Contribution to journal › Journal article – Annual report year: 2015 › Research › peer-review
SOFC brændselsceller i et intelligent elnet
Research output: Contribution to journal › Journal article – Annual report year: 2015 › Research

Sulfur Poisoning of Ni/stabilized-zirconia Anodes: Effect on Long-Term Durability
Research output: Non-textual form › Sound/Visual production (digital) – Annual report year: 2015 › Research

Advanced impedance modeling of solid oxide electrochemical cells
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2014 › Research › peer-review

Communication: The influence of CO₂ poisoning on overvoltages and discharge capacity in non-aqueous Li-Air batteries
Research output: Contribution to journal › Journal article – Annual report year: 2014 › Research › peer-review

Degradation Studies on LiFePO₄ cathode
Research output: Contribution to journal › Conference abstract in journal – Annual report year: 2014 › Research › peer-review

Fuel flow distribution in SOFC stacks revealed by impedance spectroscopy
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2014 › Research › peer-review

Impedance of SOFC electrodes: A review and a comprehensive case study on the impedance of LSM:YSZ cathodes
Research output: Contribution to journal › Journal article – Annual report year: 2014 › Research › peer-review

Impedance perspectives on Li-air battery overpotentials
Research output: Contribution to conference › Conference abstract for conference – Annual report year: 2014 › Research › peer-review

Kinetic Studies on State of the Art Solid Oxide Cells
Research output: Contribution to journal › Conference abstract in journal – Annual report year: 2014 › Research › peer-review

Rheological analysis of stabilized cerium-gadolinium oxide (CGO) dispersions
Research output: Contribution to journal › Journal article – Annual report year: 2014 › Research › peer-review

Structural instability and electrical properties in epitaxial Er₂O₃-stabilized Bi₂O₃ thin films
Research output: Contribution to journal › Journal article – Annual report year: 2014 › Research › peer-review

Sulfur Poisoning of SOFC Anodes: Effect of Overpotential on Long-Term Degradation
Research output: Contribution to journal › Journal article – Annual report year: 2014 › Research › peer-review

Durability and Performance of High Performance Infiltration Cathodes
Research output: Contribution to journal › Journal article – Annual report year: 2013 › Research › peer-review

Electrochemical Characterization and Degradation Analysis of Large SOFC Stacks by Impedance Spectroscopy
Research output: Contribution to journal › Conference article – Annual report year: 2013 › Research › peer-review

Investigation of novel solid oxide fuel cell cathodes based on impregnation of SrTixFe1-xO3-δ into ceria-based backbones
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2013 › Research › peer-review

Rheology of stabilized cerium-gadolinium oxide (CGO) colloidal system
Research output: Contribution to conference › Conference abstract for conference – Annual report year: 2013 › Research › peer-review
Photochromism and electrochemistry of a dithienylcyclopentene electroactive polymer
Research output: Contribution to journal › Journal article – Annual report year: 2008 › Research › peer-review

SOFC research and development at Risø DTU
Research output: Contribution to conference › Paper – Annual report year: 2008 › Research

Electrochemical Impedance Studies of SOFC Cathodes
Research output: Contribution to journal › Conference article – Annual report year: 2007 › Research › peer-review

Synthesis and characterization of dinuclear ruthenium(II) complexes based on 4,4'-bipyridyl type bridging ligands
Research output: Contribution to journal › Journal article – Annual report year: 2007 › Research › peer-review

Projects:

**Machine Learning Orchestrated Discovery and Synthesis of Organic Materials**
Project: PhD

**Organic Redox Flow Batteries: Active Materials and Cell Stability**
Project: PhD

**Electrochemical Characterization for Improvement of PEM Electrolysers for Flexible Energy Storage**
Project: PhD

**In-operando spatially resolved probing of solid oxide electrolysis/fuel cells**
Project: PhD

**Acid-base chemistry and HT-polymer electrolyte membranes**
Project: PhD

**In-operando localized probing of solid oxide electrolysis/fuel cells by controlled atmosphere high temperature scanning probe microscopy**
Project: PhD

**Electron microscopy of electrochemical processes**
Project: PhD

**In situ characterisation of structure and transport in battery electrolytes and electrodes**
Project: PhD

**Elektrode Kinetics and Gas Conversion in Solid Oxide Cells**
Project: PhD

**Investigating the Stability of Electrode-electrolyte-interfaces**
Project: PhD

**Low Temperature NOx decomposition using an electrochemical Reactor**
Project: PhD

**Computational Investigations of transport mechanisms across battery interfaces**
Project: PhD
High Temperature Alkaline Electrolyser Cell  
Project: PhD

Investigation of performance and lifetime limiting effects in Li-air battery cells  
Project: PhD

Performance and lifetime limiting effects in Li-ion batteries  
Project: PhD

Degradation mechanism of the LSCF Cathode  
Project: PhD

SOFC Stack Diagnostics  
Project: PhD

Lifetime limiting effects in pre-commercial solid cell devices  
Project: PhD

Towards Smart Grid Ready SOFC  
Project: Research

Durable and Robust SOFC  
Project: Research

Activities:

Regenerating the performance of solid oxide electrolyzers by periodic treatments to extend lifetime  
Activity: Talks and presentations › Conference presentations

Press clippings:

Forsknings- og uddannelsesministeren på besøg hos batteriforskere på DTU  
Press/Media: Press / Media