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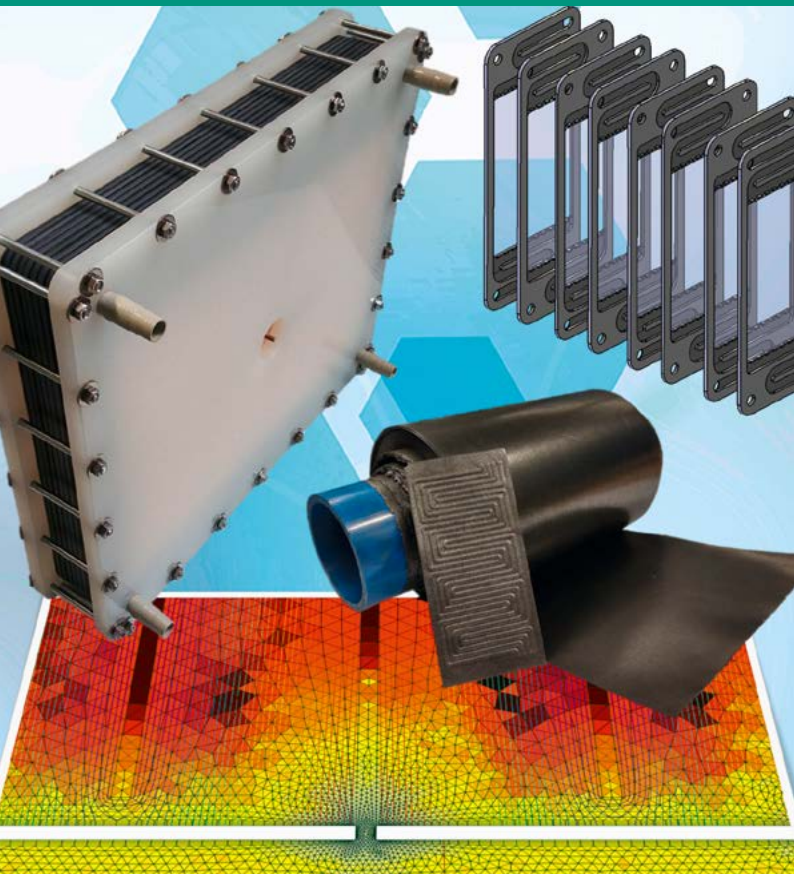
FRAUNHOFER INSTITUTE FOR ENVIRONMENTAL, SAFETY, AND ENERGY TECHNOLOGY UMSICHT

COLLOQUIUM ON MAY 6TH, 2021

VIRTUAL E3C
Electrochemical Cell Concepts Colloquium



Virtual E3C
Electrochemical Cell Concepts Colloquium 2021

THURSDAY MAY 6TH, 2021

PROGRAM

AT A GLANCE

Already for the second time, the "E3C – Electrochemical Cell Concepts Colloquium" is taking place, organized by the Fraunhofer UMSICHT. It was established to serve as a platform for the interdisciplinary exchange of innovations and scientific findings in the field of electrochemical reactors. Due to the persistent pandemic, the event is designed as an online colloquium.

The colloquium is focused on the question which similarities and potential combinations the designs and characteristics of the different reactor types have in common. This includes non-flow and flow reactors – like batteries, flow batteries, fuel cells, electrolysis, electrosynthesis or electrodialysis cells.
Scientists from different fields of application can combine their expertise so that the technologies can benefit from each other's developments and innovations, in order to advance the overall state of research.

This interdisciplinary exchange on the design of electrochemical reactors is divided into four sessions:

- Functional components
- Characterization
- Manufacturing
- Cell and stack design

08.30 **Opening and greetings**
PROF. DR. CHRISTIAN DOETSCH, JAN GIRSCHIK
Fraunhofer UMSICHT, Oberhausen

SESSION 1 | FUNCTIONAL COMPONENTS
Chair: Dr. Edward Nürenberg, The Hydrogen and Fuel Cell Center ZBT, Duisburg

KEYNOTE

08.45 **DHBT electrodes: from lab-scale to industrial use potentials**
PROF. DR. CHRISTINA ROTH
University of Bayreuth, Bayreuth

09.30 **Rapid oxidative activation of graphite felt electrodes for vanadium redox flow batteries**
KHALED SETEIZ
IMTEK – Department of Microsystems Engineering,University of Freiburg, Freiburg

09.50 **Dendritic microstructures in gas diffusion electrodes**
MARVIN KOSIN
Fraunhofer UMSICHT, Oberhausen

10.10 **A tubular membrane electrode assembly with a monolayer oxygen electrode**
DR. SIMON RESSEL | ARMIN LAUBE
HAW Hamburg, Hamburg

10.30 COFFEE BREAK

SESSION 2 | CHARACTERIZATION
Chair: Prof. Dr. Ulf-Peter Apfel, Ruhr-University Bochum, Bochum

10.55 **Characterization of paper-engineered porous transport layers for PEM electrolysis**
ADIB CAIDI
The Hydrogen and Fuel Cell Center ZBT, Duisburg

11.20 **Evaluation of the electrochemical vanillin reduction in a plan parallel flow reactor for the production of biobased polymer building blocks**
ROBIN KUNKEL
Fraunhofer ICT, Pfinztal

11.40 **Effective fluid flow parameters and limiting current densities in flow-by redox flow batteries**
PROF. DR. THORSTEN STRUCKMANN
HAW Hamburg, Hamburg

12.00 **High-throughput electrochemical characterization of aqueous organic redox flow battery active material**
ERIC FELL
Harvard University, Cambridge, USA

12.20 **Poster pitch**
Chair: Prof. Dr. Ulf-Peter Apfel, Ruhr-University Bochum, Bochum

12.35 LUNCH BREAK

SESSION 3 | MANUFACTURING
Chair: Dr. Anna Grevé, Fraunhofer UMSICHT, Oberhausen

13.35 **AI inspired design and manufacturing of fuel cells**
XIN YEE TAI
Loughborough University, Loughborough, UK

14.00 **Cost reduction – a close look at the cell components**
DR. MELANIE SCHROEDER
J. Schmalz GmbH, Glatten

14.20 **Additive manufacturing for electrochemical reactors: design and applications**
DR. LUIS FERNANDO ARENAS MARTINEZ
University of Southampton, Southampton, UK

14.40 COFFEE BREAK

SESSION 4 | CELL AND STACK DESIGN
Chair: Dr. Benedikt Rösen, Cluster EnergieForschung.NRW

KEYNOTE

15.00 **Membraneless flow cells for electrochemical energy conversion**
PROF. DR. ERIK KJEANG
Canada Research Chair in Fuel Cell Science and Technology
Simon Fraser University, Surrey, Canada

15.50 **New generation of flow-through capacitive deionization devices**
PROF. DR. JOYDEEP DUTTA
KTH Royal Institute of Technology, Stockholm, Sweden

16.10 **Electrode, reactor and process design for advanced oxidation processes**
ROBERT KELLER
RWTH Aachen, Aachen

16.30 **PEM electrolysis for different power scales**
DR. MARTIN MÜLLER
Forschungszentrum Jülich GmbH, Jülich

16.50 **Summary and conclusion**

17.00 END OF THE COLLOQUIUM

ORGANIZER | PARTNERS

Fraunhofer UMSICHT is a pioneer for sustainable energy and raw materials management by supplying and transferring scientific results into companies, society and politics. The UMSICHT team researches and develops, together with partners, sustainable products, processes and services, which inspire.
This is our mission.

Competence of the department
"Electrochemical Energy Storage"

We develop electrochemical energy storage systems for the demand-oriented provision of electricity. Our concepts contribute to the sector coupling of energy and production. We specialize in the development and manufacture of batteries and in the technological, economic, and systemic evaluation of power-to-x technologies.

PARTNERS

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ORGANIZATIONAL

REGISTRATION AND PARTICIPATION FEE

COLLOQUIUM ON MAY **06th, 2021**
Please register by April 29th using our online registration on the internet at **s.fhg.de/E3C21**.

The participation fee is 60 € and will be charged by invoice. A small contingent of free tickets is available for students (certificate of study required). If this is exhausted, the reduced participation fee is 20 €. You will receive a confirmation of participation by e-mail. In case of non-participation without prior written cancellation (at least one week before the event), we charge the full participation fee. Members of the UMSICHT-Förderverein attend the event free of charge (1 participant per company).

YOUR CONTACT

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