

# Program (CEST)

**Sunday, 23 October 2022**

17:00 – 20:00 ARRIVAL and REGISTRATION

18:00 *BUFFET SUPPER*

## Start of the Scientific Program

20:00 Klaudia Seibel **KEYNOTE:**  
**Materials and Energy in Science  
Fiction: New Directions for Thought**

**Monday, 24 October 2022**

08:00 *BREAKFAST*

## Session 1: Fundamental Physics – Concepts that Define Demand for Materials

09:00 – 10:00 Christian Jooß  
(ONLINE) **Energy Conversion in Advanced  
Materials – from Single Excitations to  
Correlated Dynamics**

10:00 – 11:00 Alfred Ludwig **High-throughput Experimentation for  
Discovery of Future Energy Materials**

11:00 – 11:30 *COFFEE BREAK*

11:30 – 11:50 Gabi Schierning **Current Status on the Interplay of  
Electronic Instabilities and  
Functionality in Martensites: Common  
Motifs in Charge Density Wave  
Materials, Shape Memory Alloys,  
Ferroelectrics, and Superconductors**

11:50 – 12:10 Hongbin Zhang **In-silico Design of Magnetic Materials  
for Energy Applications**

12:10 – 12:20 **Conference Photo (outside at the main entrance)**

12:20 – 13:30 *LUNCH*

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## Session 2: The Materials' Space

13:30 – 14:30	Rossitza Pentcheva	<b>Tailoring the Functionality of Transition Metal Oxide Surfaces and Interfaces for Energy Conversion Applications</b>
14:30 – 15:30	Tejs Vegge	<b>Transforming Computational Discovery of Energy Materials and Interfaces</b>
15:30 – 16:00	<i>COFFEE BREAK</i>	
16:00 – 16:20	Steven Angel	<b>Nanoscale High-entropy Oxides (HEO) from Spray-flame Synthesis for Oxygen Evolution Reaction (OER) in Water Splitting</b>
16:20 – 16:40	Vineetha Vinayakumar	<b>Pilot-scale Preparation of Nickel-cobalt Based Anode Materials for Alkaline Electrolysis</b>
16:40 – 17:30	<b>Poster Slam</b> (2 min per poster)	
17:30 – 19:00	<b>Poster Session 1</b>	
19:00 – 20:00	<i>DINNER</i>	
20:00	<b>Round Table Discussion</b>	

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Tuesday, 25 October 2022

07:30            *BREAKFAST*

## *Session 3: The Materials' Function in Energy Technologies*

08:30 - 09:30    Jeffrey Bergthorson    **Using Metals as Carbon-free Fuels and Energy Carriers**

09:30 - 10:30    Linda Nazar            **Materials for High-Energy Batteries**

10:30 - 11:00    *COFFEE BREAK*

11:00 - 12:00    Kerstin Schierle-Arndt    **An Industrial View on the Development of Materials for Energy Technologies**

12:00 - 13:30    *LUNCH*

13:30 - 14:30    Hubert Gasteiger        **Catalyst Development Approaches for Sustainable Proton Exchange Membrane (PEM) Fuel Cells and Electrolyzers**

14:30 - 14:50    Jian Duan                **Elucidation of Failure Mechanism and the Importance of Stack Pressure in the Li Metal Solid State Battery**

14:50 - 15:10    Hanyu Huo                **Interfacial Engineering of Solid-state Batteries**

15:10 - 15:30    Florian Strauß            **High-Entropy Multi-element Substituted Lithium Argyrodite Superionic Solid Electrolytes**

15:30 - 16:00    *COFFEE BREAK*

16:00 - 17:00    **Poster Slam** (2 min per poster)

17:00 - 18:30    **Poster Session 2**

18:30 - 19:30    *DINNER*

19:30            **Panel Discussion**  
(Christian Hagelüken, Umicore; Dierk Raabe, MPI Eisenforschung; Kerstin Schierle-Arndt, BASF; Peter Viebahn, Wuppertal Institut)

# Program (CEST)

Wednesday, 26 October 2022

07:30                    *BREAKFAST*

## *Session 4: Old Materials – New Perspectives*

08:30 – 09:30	Dierk Raabe	<b>The Materials Science behind Sustainable Metals</b>
09:30 – 10:30	Martin Schneider	<b>The Building Materials Industry in the Changing Values of our Times</b>
10:30 – 11:00	<i>COFFEE BREAK</i>	
11:00 – 11:20	Morteza Abedini	<b>Materials Degradation by the Interaction of Wear and Corrosion: A Survey of Tribocorrosion Processes</b>
11:20 – 11:40	Volker Weiser	<b>On the Combustion of Silicon as a Carbon-free Fuel for Power Generation</b>
12:00 – 13:00	<i>LUNCH BREAK</i>	
13:00	<b>Excursion:</b> <b>Hike in the mountains around Bad Honnef</b>	
17:30 - 18:30	<b>Poster Slam</b> (2 min per poster)	
18:30 - 19:30	<i>HERAEUS DINNER</i> at the Physikzentrum (cold & warm buffet, with complimentary drinks)	
19:30	<b>Poster Session 3</b>	

# Program (CEST)

Thursday, 27 October 2022

07:30                      *BREAKFAST*

## ***Session 5: The Materials' "Economy"***

08:30 – 09:30	Christian Hagelüken	<b>Resources, Recycling and Circular Economy: The Case of Metals</b>
09:30 – 10:30	Peter Viebahn	<b>Critical Materials of the Transition in the Energy and Industry Sector – Status, Assessment and Perspectives</b>
10:30 – 11:00	<i>COFFEE BREAK</i>	
11:00 – 11:20	Johannes de Boor	<b>Lightweight and Sustainable Thermoelectric Generators for Waste Heat Recovery</b>
11:20 – 11:40	Jannik Neumann	<b>Preliminary Techno-Economic Assessment of Iron as an Energy Carrier</b>
11:40 – 13:00	<b>Moderated Final Discussion</b>	
13:00 – 14:00	<i>LUNCH</i>	

***End of Seminar / Departure***