

**“The Physical, Chemical and  
Technological Aspects of the  
Fundamental Transition in Energy Supply  
from Fossil to Renewable Sources – Key  
Aspect: Energy Storage”**

**791. WE-Heraeus-Seminar**

**18 – 22 June 2023**

**at the Physikzentrum Bad Honnef/Germany**

**WILHELM UND ELSE  
HERAEUS-STIFTUNG**



# Program (CEST)

**Sunday, 18 June 2023**

16:00 – 20:00      ARRIVAL and REGISTRATION

19:00                *BUFFET SUPPER*

## ***Start of the Scientific Program***

18:00 – 18:15      Dieter Meschede      **Welcome**

18:15 – 18:45      Karl Friedrich Ziegahn      **Introduction into the Technology  
Required for the Energy Revolution**

18:45 – 19:00      Stefan Jorda      **About the Wilhelm and Else Heraeus  
Foundation**

**Monday, 19 June 2023**

07:30                *BREAKFAST*

## ***Climate***

08:30 – 09:15      Marie-Luise Beck      **200 Years of Climate Science - from  
Physics to a Transdisciplinary  
Research Field**

09:15 – 10:00      Christian-D.  
Schönwiese      **Global Climate Change in Industrial  
Time - Observations and Forcing**

10:00 – 10:30      *COFFEE BREAK*

10:30 – 11:15      Michaela Hegglin      **Climate Change Information - from  
Models to Observations**

11:15 – 12:00      Maximilian Fichtner      **The Transformation of Propulsion**

12:00 – 12:30      **Discussion**

12:30– 12:45      **Conference Photo (outside at the main entrance)**

12:45 – 14:00      *LUNCH BREAK*

# Program (CEST)

## *European Aspects of Energy Transition*

14:00 – 14:45	Hans-Martin Henning	<b>Transformation of Germany's Energy System in the Context of the EU Green Deal Targets</b>
14:45 – 15:30	Laura García Laverde	<b>Bio Energy Resources</b>
15:30 – 16:15	Stefan Niessen	<b>Symbiotic Renewable Energy Supply for Europe</b>
16:15 – 16:45	<i>COFFEE BREAK</i>	

## *Electricity and Heat from Renewable Energy Sources*

16:45 – 17:30	Rutger Schlatmann	<b>Status and Innovation Potential of Photovoltaics, Key Enabler for the Energy and Material Transition</b>
17:30 – 18:15	Stephan Barth	<b>Energy Supply by Wind Power – Current Status and Future Developments</b>
18:15 – 19:00	Eva Schill	<b>Geothermal Energy Supply</b>
19:00 – 20:00	<i>DINNER</i>	
20:00 – 22:00	<b>Poster Session 1 and Discussion</b>	

# Program (CEST)

**Tuesday, 20 June 2023**

07:30                    *BREAKFAST*

## ***Energy Storage I (Power to Gas, Overview/Hydrogen)***

08:30 – 09:15      Roland Dittmeyer      **Overview to Power-to-Gas and Methanisation as Example**

09:15 – 10:00      Christian Gebauer      **PEM Electrolysis – Energy Storage via Hydrogen and the Role of Precious Metals**

10:00 – 10:30      *COFFEE BREAK*

## ***Energy Storage II (Conversion to Hydrocarbons and Chemical Batteries)***

10:30 – 11:15      Andrea Lübcke      **Ramp-Up of the Hydrogen Economy**

11:15 – 12:00      Laura Jung      **Hydrogen Integration in Industry**

12:00 – 12:30      **Discussion**

12:30 – 14:00      *LUNCH BREAK*

## ***Energy Storage III (Conversion to Hydrocarbons and Chemical Batteries)***

14:00 – 14:45      Rüdiger Eichel      **SOEC and High Temperature CO-Electrolysis as a New Option**

14:45 – 15:30      Michael Felderhoff      **Heterogeneous Catalysis and Hydrogen Storage**

15:30 – 16:15      Franz W. Iven      **Die Rolle von Energiespeichern als eines der zentralen Elemente künftiger Energieversorgungssicherheit**

16:15 – 16:45      *COFFEE BREAK*

16:45 – 17:30      Thorsten Seipp      **Redox-Flow-Batteries**

17:30 – 18:15      Wolfgang Bauer      **The Future of Batteries for Transportation**

18:15 – 19:00      **Discussion**

19:00 – 20:00      *DINNER*

20:00 – 22:00      **Poster Session 2 and Discussion**

# Program (CEST)

Wednesday, 21 June 2023

07:30                    *BREAKFAST*

## **Chemical Batteries**

08:30 – 09:15      Martin Greiner            **A Complex-system Modeller's View on the Decarbonization of the European Energy System**

09:15 – 10:00      Mirko Schäfer            **Net-zero Germany: Transition Paths to Climate Neutrality by 2045**

10:00 – 10:30      *COFFEE BREAK*

## **Hydro Storage I**

10:30 – 11:15      Gerhard Luther            **The Role of Short-term Storage like Hydropower in Abandoned Opencast Mines in the Energy Transition**

11:15 – 12:00      David Gessel            **Profitability Analysis of the Different Storage Concepts**

12:00 – 12:30      **Discussion**

12:30 – 14:00      *LUNCH BREAK*

## **Hydro Storage II**

14:00 – 14:45      Matthias Feldmann        **Pumped Storage Hydropower in Former Surface Mining Pits**

14:45 – 15:30      Matthias Puchta            **Hydropower Storage - The STENSEA-Project**

15:30 – 16:00      **Discussion**

16:00 – 16:30      *COFFEE BREAK*

16:30 – 17:15      Bernhard Ernst            **Electrochemical vs Pumped Hydro Systems for Bulk Energy Storage**

17:15 – 18:00      Ulrich Platt            **Renewable Energy in Europe - What is Necessary, What Is Possible?**

18:00 – 18:30      **Discussion**

18:30                    *HERAEUS DINNER at the Physikzentrum (cold & warm buffet, with complimentary drinks)*

# Program (CET)

Thursday, 22 June 2023

07:30            *BREAKFAST*

## ***Other Energy Storage Concepts***

08:30 – 09:15    Annelies  
Vandersickel            **Thermal Storage and the Heating  
Sector – an Often Overlooked  
Potential**

09:15 – 10:00    Michael Düren            **From Desertec to the Present Stage of  
the Energy Transition**

10:00 – 10:30    *COFFEE BREAK*

## ***The Role of Politics***

10:30 – 12:00    **Podiumsdiskussion zur Energiewende - aus Sicht von Politik  
und Wissenschaft**  
Frank-Detlef Drake (EON)  
Michael Düren (Physik)  
Kurt Wagemann (Chemie)  
Moderation: Karl Friedrich Ziegahn

12:00 – 12:30    **Closing and Poster Prizes**

12:30            *LUNCH*

***End of Seminar / Departure***