

# 17th Society and Materials (SAM) International Conference

Karlsruhe, Germany  
9-10 May 2023

## Venue

### Steamwork

Roonstraße 23a, 76137 Karlsruhe, Germany

## Access

20 minutes walking (1.6km) from train station Karlsruhe Hbf  
13 minutes by Tram 2 (every 10m) or Tram 3



## Hotel recommendations

### Hotel Santo Karlsruhe

Karlstrasse 69, 76137 Karlsruhe

### Arthotel ANA Eden Karlsruhe

Bahnhofstraße 15, 76137 Karlsruhe

## SAM Organizing Committee

### **ArcelorMittal**

Anne-Laure Hettinger, Ayoung Jo, Julio L. Rivera

### **IF Steelman**

Jean-Pierre Birat

### **IRT-M2P**

Gaël Fick

### **ITAS – KIT**

Marcel Weil, Meike Hebich, Hüseyin Ersoy,  
Merve Erakca, Sebastian Bautista, Manuel Baumann

### **Knowledge and Innovation**

Andrea Declich

### **NTNU**

Leiv Kolbeinsen

## Contact

### **SAM Organizing Committee**

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## Day 1 (Tuesday, May 9)

08:40	<b>Registrations &amp; Coffee</b>
09:00	<b>Opening by</b> <i>Jean-Pierre Birat, IF Steelman // Anne-Laure Hettinger, Ayoung Jo, ArcelorMittal</i>
09:05	<b>Host - SAM Organizing Committee by</b> <i>Marcel Weil, KIT-ITAS</i>
09:10	<b>Plenary - Innovation for Sustainable Development – challenges in times of multiple crises</b> <i>Armin Grunwald, Head of KIT-ITAS</i>

### Session 1 Energy Transition (batteries and supercapacitors)

09:55	<b>Keynote – Life-cycle oriented sustainability analysis of current and future battery systems</b> <i>Marcel Weil, KIT-ITAS, Germany</i>
10:40	<b>Exploring social sustainability in emerging battery technologies</b> <i>Viera Pechancová, Manuel Baumann, Nibedita Saha, Patrick Stuhm, Petr Saha, Tomas Bata University in Zlín, Czech Republic</i>
11:05	<b>Prospective Life Cycle Assessment of Emerging Gel Polymer based Magnesium Batteries</b> <i>Prasad Mandade, Marcel Weil, Manuel Baumann, Liping Wang, HIU, Germany</i>
11:30	<b>Greener battery production through aqueous cathode processing</b> <i>Hannah Mittag, Jonas Henschel, Saskia Wessel, Jens Tübke, Fraunhofer Research Institution for Battery Cell Production FFB, Germany</i>
11:55	<b>Prospective Life cycle assessment of Hard Carbon Anode Materials</b> <i>Huiting Liu, Manuel Baumann, Niklas von der Aßen, Marcel Weil, KIT-ITAS, Germany</i>
12:20	<b>GROUP PHOTO &amp; LUNCH (50m)</b>
13:10	<b>Environmental Assessment of Supercapacitor Electrodes Based on Graphene from Biomass Waste</b> <i>Fatemeh Bahmei, Nader Bahramifar, Shahram Ghasemi, Marcel Weil, Habibollah Younesi, Tarbiat Modares University, Iran</i>
13:35	<b>Prospective LCAs for an Innovative Metal and Liquid Free Organic Lithium-Ion Battery - Lessons Learned from a French-German Cooperation</b> <i>Sebastián P. Bautista, Merve Erakca, Marcel Weil, Dominic Bresser, Jakob Asenbauer, Kai Shi, Simon Jestin, HIU, Germany</i>
14:00	<b>Prospective Life Cycle Assessment of a Model Magnesium Battery: Case Study Under the Constructive Sustainability Assessment Framework</b> <i>Sebastián P. Bautista, Marcel Weil, Manuel Baumann, HIU, Germany</i>
14:25	<b>Toxicity Screening of precursors for Sodium-Ion battery cathodes</b> <i>Manuel Baumann, Marcel Häringer, Marius Schmidt, Luca Schneider, Jens Peters, Werner Bauer, Joachim R. Binder, Marcel Weil, KIT - ITAS, Germany</i>
14:50	<b>COFFEE BREAK &amp; POSTER (25m)</b>

### Session 2 Green Processes for a decarbonized industry

15:15	<b>Keynote – Fossil-free H2 generation and the carbon neutral future for industry: how we address this challenge at John Cockerill</b> <i>Jean Jouet, John Cockerill, Belgium</i>
16:00	<b>Eco-design to manage generated liming wastewater in tannery: Sustainable approach</b> <i>Md. Abul Hashem, Md. Anik Hasan, Sadia Mim and Sofia Payel, Khulna University of Engineering &amp; Technology (KUET), Bangladesh</i>
16:25	<b>Sustainable production of ferromanganese through the HAlMan process</b> <i>Jafar Safarian, Norwegian University of Science and Technology (NTNU), Norway</i>
16:50	<b>Exploiting the decarbonization potentials of a circular economy for buildings: how can green public procurement contribute?</b> <i>Meta Thurid Lotz, Andrea Herbst, Fraunhofer Institute for System and Innovation Research ISI</i>
17:15	<b>The role of hydrogen, carbon capture, electrification and material efficiency in the decarbonization of the global steel sector</b> <i>Kimon Keramidias, Silvana Mima, Adrien Bidaud, Université de Grenoble-Alpes, Grenoble, France</i>
17:40	<b>Smart revamping of gas and steam networks for the steelworks of the future</b> <i>Valentina Colla, Ismael Matino, Stefano Dettori, Claudio Mocci, Lorenzo Vannini, Ruben Matino, Teresa Annunziata Branca, Scuola Superiore Sant'Anna, Italy</i>
18:05	<b>Life Cycle Analysis of production and use of anthropogenic dark earth for agriculture as Greenhouse Gas Removal</b> <i>Jens Buchgeister, Alexander Schneider, Armin Siepe, KIT-ITAS, Germany</i>
	<b>END OF DAY 1</b>

### Networking Dinner ([\\*RSVP](#))

19:00	<p>KIT-ITAS would like to invite you to a networking event and offer you dinner.</p> <p>Please reserve your seat by April 25! <a href="#">*RSVP</a> (<b>Only registered people on Doodle will be booked</b>)</p>
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## Day 2 (Wednesday, May 10th)

08:40

Registrations & Coffee

### Session 3 Advances in Material Flow Analysis (MFA)

**09:00** **The future availability of zinc: Potential contributions from recycling and necessary ones from mining**  
*Leon Rostek, Antonia Loibl, Fraunhofer Institute for Systems and Innovation Research ISI, Germany*

**09:25** **Applying industrial ecology methods to fictional worlds: an example on the spice and water cycles on the planet Arrakis from Frank Herbert's Dune**  
*Romain Guillaume Billy, Daniel Beat Müller, Norwegian University of Science and Technology, Trondheim, Norway*

**09:50** **Tracing the fate of plastics – sources, pathways and sinks of microplastics in the environment**  
*Saskia Ziemann, Anne Gunkel, Project Management Agency Karlsruhe, KIT, Germany*

### Session 4 Contributions from Social Sciences and Humanities (SSH)

**10:15** **Keynote - Net-Zero hydrogen use in industry: a slow past, an accelerated future?**  
*Jean-Pierre BIRAT, IF Steelman, France*

**11:00** **Perceptions of climate justice compared to other policy fields**  
*Rabea Scholz, University of Postdam, Germany*

**11:25** **Involve society to shape sustainable cities: how to merge innovation and citizens needs**  
*Olmo Guagnetti, Andrea Porcari, Daniela Pimponi, Monica Lavagna, Serena Giorgi, Associazioni Italiana per la Ricerca Industriale (Airi), Italy*

**11:50** **Education of students and citizens for process development**  
*Arnaud Delebarre, Elise El Ahmar, Marco Campestrini, Willy Morscheidt, Marie-Françoise Curto, Mines Paris PSL*

**12:15** **Is Citizen Science relevant for materials research?**  
*Andrea Declich, Luciano d'Andrea, University of Rome, Italy*

**Jean-Sebastien Thomas Award 2023**

**12:40** **GROUP PHOTO AND LUNCH**

### Session 5 Advances in Life Cycle Assessment (LCA)

**13:40** **Challenges of prospective Life Cycle Assessment and review of scale-up techniques applied**  
*Merve Erakca, Manuel Baumann, Chrisoph Helbig, Marcel Weil, KIT-ITAS, Germany*

**14:05** **Host-to-byproducts matrices to help assessing abiotic resources accessibility**  
*Titouan Greffe, Manuele Margni, Cécile Bulle, CIRAIQ Polytechnique Montreal, Canada*

**14:30** **On the variability of impact intensity of electricity and its relevance for life cycle assessment**  
*Jens F. Peters, Mercedes Burguillo, University of Alcalá (UAH), Spain*

**14:55** **Keynote**  
*Jarod Kelly, Argonne Laboratories, USA*

**15:40** **BREAK (10m)**

**15:50** **LCA of Carbon Fibres: exploring the reasons behind the hugely diverging published data**  
*Ignaas Verpoesta, Véronique Michaudb, Jun Takahashic, KU Leuven University, Belgium*

**16:15** **Multi-Criteria Decision Analysis Methods used for Sustainability Assessment**  
*Christina Wulf, M. Haase, M. Baumann, L. Mesa Estrada, T. Müller, Institute of Energy and Climate Research - Systems Analysis and Technology Evaluation, Germany*

**16:40** **Conclusion and wrap-up of the conference**  
*Jean-Pierre BIRAT, IF Steelman, France*

**16:50** **END OF DAY 2**

### Visit to ZKM (\*[RSVP](#))

**17:00** **1 hour guided tour at the ZKM (Center for Art and Media)!**  
**\*[RSVP](#) (Only registered people on Doodle will be booked)**

## Posters

**MalsoVi project: vacuum insulation materials, innovative approach for windows in construction and renovation**

*Sylvie Gros Lambert, Angélique Léonard, Liège Université – Chemical Engineering – PEPs, Belgium*

**Constructive Sustainability Assessment of an Emerging Energy Storage Technology**

*Hüseyin Ersoy, KIT-ITAS, Germany*

**Life Cycle Assessment of Bamboo Briquette Production in Iloilo, Philippines**

*Jasmine May G. De Leon, Marjorie Baynosa, Jhud Mikhail Aberilla, University of the Philippines Diliman*

**Life Cycle Assessment of customized PV semi fabricates implied in BIPV and IIPV industrial scale systems**

*Arnaud Wieclawski, Sandra Belboom, HELMo-CRIG, Belgium*

**Sustainable Design of Sodium based Supercapacitors for Mobile and Stationary Applications**

*Marcel Weil, Manuel Baumann, Alberto Varzi, Ignazio Castillo, Jon Ajuria, Fateme Bahmei, Helmholtz-Institute Ulm for Electrochemical Energy Storage (HIU), Ulm, Germany*