

3rd International Symposium on the Frontiers of Functional Materials Research

Date & Time: 13:00 – 17: 30, April 8th, 2024

Place: Graduate School of Environmental Studies ([J22](#)), 4F Lecture Room 5
環境科学研究科棟(J22) 4階 講義室 5
https://www.tohoku.ac.jp/map/en/?f=AY_J22

It is easy to make bad devices out of good materials, but impossible to make good devices with bad materials. Materials always come first. In this symposium, we invite the world leading scientists to discuss the state-of-the-art research on functional materials for e.g., batteries, solar cells, thermoelectrics, fuel cells, and other energy related materials.

This time, we invite Prof. Wolfgang G. Zeier from the University of Münster, Germany, to discuss recent topics in solid-state batteries and related materials and provide an opportunity to exchange research ideas and perspectives with young researchers and students at Tohoku University.

Time table

13:00-13:05 Opening remarks
 Assoc. Prof. Saneyuki Ohno, IMRAM, Tohoku University

Lectures

13:05-13:25 **Johannes Hartel**, PhD candidate with Prof. Zeier, University of Münster
 Title: Development of novel lithium argyrodite solid electrolytes for application as catholyte in solid-state batteries

13:25-13:45 **Huang Zheng**, PhD candidate with Prof. Ohno, Kyushu University
 Title: The design principles for a new class of Na-ion conducting halides: NaMCl₆ (M = Nb, Ta)

13:45-14:25 **Dr. Arunkumar Dorai**, IMRAM, Tohoku University
 Title: Evaluating active material dissolution in lithium-sulfur batteries using Magnetic resonance imaging

14:25-15:05 **Dr. Randy JALEM**, Senior researcher, NIMS
 Title: Computational insights into the bulk and grain-boundary ionic transport mechanism of sulfide-type solid electrolytes for all-solid-state batteries

15:05-15:20 Coffee break

15:20-16:00 **Associate Prof. Saneyuki Ohno**, IMRAM, Tohoku University
 Title: Challenges and perspectives on solid-state Li-S batteries

Invited lecture

16:00-17:00 **Prof. Wolfgang G. Zeier**, University of Münster
 Title: On strain and transport limitations in solid state batteries

17:00-17:30 Discussion

17:30 Closing remark



Wolfgang Zeier received his doctorate from the University of Mainz in 2013, followed by postdoctoral stays at the University of Southern California, the California Institute of Technology, and Northwestern University. After leading an independent research group at the University of Giessen, he now holds a professorship for inorganic solid-state chemistry at the University of Münster. In addition, he heads a department at the Helmholtz-Institute Münster, Ionics in Energy Storage. His research interests encompass the fundamental structure–property relationships in solids, with a focus on thermoelectric and ion-conducting materials, as well as solid–solid interfacial chemistry for all-solid-state batteries.

Contact:

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This special symposium is co-organized by Tohoku Energy Device Chemistry Research Group and The Electrochemical Society of Japan TOHOKU Branch, and is sponsored by JST GteX "Developments of Safety & Long-Life Oxide-Based Solid State Batteries (JPMJGX23S2).



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Apr. 8th, 2024

Venue: Graduate School of Environmental Studies (J22), 4F Lecture Room 5 (環境科学研究科棟(J22) 4階 講義室5)

Special guest



Prof. Wolfgang G. Zeier
University of Münster

13:00 – 13:05

Opening remarks

13:05 – 13:25

Johannes Hartel (University of Münster)

“Development of novel lithium argyrodite solid electrolytes for application as catholyte in solid-state batteries”

13:25 – 13:45

Zheng Huang (Kyushu Univ.)

“The design principles for a new class of Na-ion conducting halides: NaMCl_6 (M = Nb, Ta)”

13:45 – 14:25

Dr. Arunkumar Dorai (IMRAM, Tohoku Univ.)

“Evaluating active material dissolution in lithium-sulfur batteries using Magnetic resonance imaging”

14:25 – 15:05

Dr. Randy Jalem (NIMS)

“Computational insights into the bulk and grain-boundary ionic transport mechanism of sulfide-type solid electrolytes for all-solid-state batteries”

15:20 – 16:00

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15:20 – 16:00

**Assoc. Prof. Saneyuki Ohno (IMRAM, Tohoku Univ.)**

“Challenges and perspectives on solid-state Li-S batteries”

16:00 – 17:00

**Prof. Wolfgang G. Zeier (University of Münster)**

“On strain and transport limitations in solid state batteries”

17:00 – 17:30

**General discussion**