

The international doctoral program IGK 2495 was established in 2019 with our partner institute, the Nagoya Institute of Technology, Japan, in order to better understand lead-free perovskite materials for electro-optical-mechanical energy conversion systems. Such alternative energy sources will become increasingly vital over the next decades, not only as sources of renewable energy but also for high-tech applications, such as powering unattended wireless sensors. Of particular importance is the improved understanding of multi-length scale phenomena responsible for the energy conversion, development and implementation of state-of-the-art lead-free perovskite materials, novel 2D and 3D processing techniques, and integration into devices. Various synthesis, manufacturing, and experimental techniques will be utilized and coupled to cutting edge simulations, facilitating interdisciplinary collaboration.

Contact:

Director

Prof. Dr. Kyle G. Webber

Materials Science and Engineering Department
Institute of Glass and Ceramics
Martensstr. 5, 91058 Erlangen
E-mail: kyle.g.webber@fau.de

Co-Director

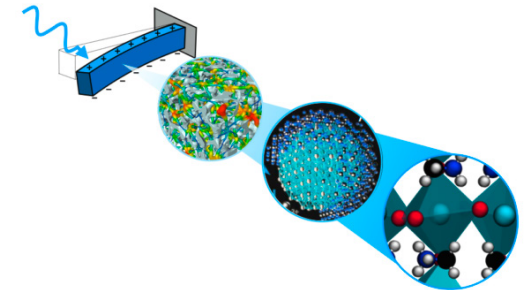
Prof. Dr. Ken-ichi Kakimoto

Frontier Research Institute for Material Science
Dep. of Life Science and Applied Chemistry
Gokiso-cho, Showa-ku, Nagoya 466-8555
E-mail: kakimoto.kenichi@nitech.ac.jp



International Research Training Group
GRK 2495

ENERGY CONVERSION SYSTEMS 1st YEARLY SCHOOL



Date: **March, 03rd – 05th 2021**

Virtual Meeting

Zoom ID: 932 0506 2331

Password: IRTG2495

Programm Day 1

March 3rd

08:30 – 08:45 / 16:30 – 16:45

Opening & Welcome

Prof. Ken-ichi Kakimoto (NITech Spokesperson)
Prof. Kyle Webber (FAU Spokesperson)

08:45 – 10:45 / 16:45 – 18:45

Invited Talks

Dr. Hisamoto (Hitachi Ltd.):
Evolution of Energy Electronics Devices

Prof. Kano (NITech): Gender Diversity in STEM Fields:
The Challenges We Face

Coffee Break

11:00 – 12:50 / 19:00 – 20:50

Project Presentations






 PROJECT A	Xianyi Duan, Niharika Gogoi and Md Ismail Haque Electronic Circuits for Piezoelectric Energy Harvesting and Sensor Array Systems
 PROJECT B	Takeshi Okada and Gabriel Stankiewicz Excitation-Conforming, Shape-Adaptive Mechano-Electrical Energy Conversion
 PROJECT C	Andreas Hegendörfer Macroscale Continuum Modeling and FE Simulation of Electromechanical Coupling in Perovskite-Based Materials
 PROJECT D	David Köllner Additive Manufacturing of Cellular Lead-Free Ceramics

Programm Day 2

March 4th

8:30 – 11:50 / 16:30 – 19:50

Project Presentations

 PROJECT E	Min uk Choi, Christian Kupfer and Ntumba Lobo Lead-Free Perovskite Semiconductors with Tunable Bandgap for Energy Conversion
 PROJECT F	Juliana Maier Room Temperature Aerosol Deposition of Lead-Free Ferroelectric Films for Energy Conversion Systems
 PROJECT G	David Dobesh Formulation and Crystallization of Perovskite Bearing Glass-Ceramics for Light Management
 PROJECT H	Ahmed Gademawla and Yuta Yamamoto Stress Modulated Electromechanical Coupling of Lead-Free Ferroelectrics
<i>Coffee Break</i>	
 PROJECT I	Tim Freund Growth of Single Crystal Transition Metal Perovskite Chalcogenides
 PROJECT J	Viktor Rehm Solution Processed Ferroelectrics in Photovoltaic Devices
 PROJECT K	Takahiro Tsuzuki Multi-Scale Modeling of Electromechanical Coupling in Perovskite-Based Ferroelectric Materials and Composites
 PROJECT L	Samuele Spreafico Modeling of Defect and Surface Chemistry of Perovskites

Coffee Break

12:00 – 13:30 / 20:00 – 21:30

PI- and Steering Committee Meeting

Programm Day 3

March 5th

8:30 – 10:50 / 16:30 – 18:50

Collaborative Project Final Presentations

Team 1: Investigation of stress-dependent material properties of Energy Harvesters

Team 2: Electrooptical and Electromechanical Coupling of Photoferroic Solar Cells

Team 3: In Depth Examination of Photostriction in Lead-Free Perovskites

Team 4: Tailoring the conversion of a multilayered material with nano piezoelectric and phototronic effects

Coffee Break

11:10 / 19:10

Announcement of the Young Researcher Award Winners

11:15 – 11:30 / 19:15 – 19:30

Final Remarks

11:30 – 12:30 / 19:30 – 20:30

Cultural Exchange
