

# Sustainable Innovation

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To produce INNOVATION in building sustainable systems of environment, energy, economy, and society

## ■ Overview:

The sustainable innovation research area aims to create sustainable energy and materials through new methods such as novel photochemical reactions of natural materials, atomic layer materials, and single nanometer processing technology, and innovative photovoltaic cell/module manufacturing methods. We have taken on global challenges of Sustainable Development Goals (SDGs) based on the following six pillars:

- 1) Including processability of the liquid supermaterials,
- 2) Development of sustainable and highly functional nature-derived materials,
- 3) Ultra-sensitive sensors to detect silent voices of humans and nature and innovative nanoscale thermal control devices,
- 4) Physics of thermoelectric conversion, sustainable energy materials, and device applications,
- 5) Development of next-generation silicon-based solar cells through novel process technologies, and
- 6) Discoverable physical property mining that uses artificial intelligence (AI) theory.

We contribute to realizing a sustainable future symbiotic society by making cutting-edge fusion science through university-wide collaboration among materials science, information science, and knowledge science.

## ■ Keywords:

Sustainable Energy, Thermoelectrics, Solar Cells, Artificial Photosyntheses, Natural Molecules, Bioplastics, Silent Voice Sensing, Materials Informatics, Artificial Intelligence, Quantum Simulation, Eco-friendly Process

## ■ Education policy:

This research area is an interdisciplinary advanced research area composed of faculty members gathering from all over the university who have been promoting researches for building a sustainable society. We carry out comprehensive, integrated education and research by dealing with a wide range of science and technology related to the construction of a sustainable society, including basic research on atoms and molecules, material integration research such as bioplastics, energy conversion devices, and zero-power functional integration systems, and research on the development of materials informatics technology by making the most use of computational science. Students belonging to the laboratories in the sustainable innovation research area can gain deep insight based on study and research in the sustainability field and develop themselves to become leaders in the vanguard of contribution to sustainability.



## Sustainable Innovation

Professor	<b>KANEKO Tatsuo</b>	Nature-guided Polymer Design Aiming at Environmentally-Harmonized Materials
Professor	<b>KOYANO Mikio</b>	
Professor	<b>MAEZONO Ryo</b>	World-largest class materials simulations using JAIST supercomputers
Professor	<b>MIZUTA Hiroshi</b>	Develop Innovative Energy & Environmental Devices using Atom-scale Nanotechnologies!
Professor	<b>OHDAIRA Keisuke</b>	Develop next-generation Si-based solar cells through novel process technologies
Associate Professor	<b>HONGO Kenta</b>	The Advent of Materials Informatics - Novel Materials Design Based on Computational and Data Sciences
Associate Professor	<b>OKEYOSHI Kosuke</b>	Polymeric organization inspired from natural environment and biomaterials
Senior Lecturer	<b>CHAMMINGKWAN Patchanee</b>	Catalyst to Polymer: Synergistic Materials Design