

## **R&D** Center for Zero CO<sub>2</sub> Emission with **Functional Materials** Since April 1st, 2022

-Toward carbon neutrality and hydrogen economy-

Currently, with global warming, carbon neutrality (zero carbon dioxide emission) is required on a global scale. Hydrogen can be produced from water, and fuel cells using hydrogen produce only water as a product without emitting carbon dioxide in the chemical reaction during power generation. So it now draws attention as one of main energy carrier of renewable energy. Hydrogen is thus a molecule capable to play an important role for the sustainable zero-carbon society. In this center, we will promote the research and development of basic important technologies related to hydrogen production, storage and transportation, and green innovation basic technologies that convert carbon dioxide into useful materials such as methanol and formic acid and fuels.



Dr. Takahiro Kondo Director, R&D Center for Zero CO<sub>2</sub> Emission with Functional Materials

# **Mission**

### R&D Center for Zero CO<sub>2</sub> Emission with **Functional Materials**

## Energy carrier production and conversion technology

- Produce hydrogen at low cost without using precious metals
- · Storage and transportation of large amounts of hydrogen safely at low cost
- Converting carbon dioxide into useful chemicals

Hydrogen production at low cost

H<sub>2</sub>O (Water)

New

**functional** 

**Base metal** 

material

Utilization of biocatalytic functions of enzymes and microorganisms

H<sub>2</sub> (Hydrogen

#### Private enterprises Heavy industry

Pure and

Applied

**Sciences** 

- Automotive related
- Chemical manufacturer
- Oil related
- Energy related
- Manufacturing industry

National project

#### **Overseas** organization

- University
- Research Institute
- **Overseas** companies

Conversion

**National** project

#### Research **Institute**

- National university corporation
- National Research and Development Agency
- Public interest incorporated foundation

Pure and Applied Sciences



- NIMS
- KEK
- AIST

Collaboration

Tsukuba **Innovation** Arena for Nanotechno logy (TIA)

# **Carbon neutrality** Sustainable hydrogen society Human resources

Address: Laboratory for Advanced Research B 307, University of Tsukuba, 1-1-1 Tennodai, Tsukuba, Ibaraki, 305-8573 Japan