

# INTERNATIONAL INSTITUTE FOR CARBON-NEUTRAL ENERGY RESEARCH

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*The International Institute for Carbon-Neutral Energy Research (I<sup>2</sup>CNER) at Kyushu University, Japan is actively seeking outstanding candidates for post-doctoral researcher position  
(Development of modulation Excitation Spectroscopy for heterogeneous catalysis).*

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## OUTLINE

The International Institute for Carbon-Neutral Energy Research (I<sup>2</sup>CNER) is a member Center of the “WPI Academy” founded by MEXT’s Research Promotion Bureau. I<sup>2</sup>CNER’s mission is to contribute to the creation of a sustainable and environmentally friendly society by conducting fundamental research for the advancement of low carbon emission and cost-effective energy systems, and improvement of energy efficiency. The research efforts are organized into three thematic research clusters or “Thrusts” as follows: Advanced Energy Materials, Advanced Energy Conversion Systems, and Multiscale Science and Engineering for Energy and the Environment. This structure allows us to capture our most relevant existing capabilities and organize them for the best future impact. It also provides an efficient mechanism for world-class international and Japanese researchers to work interactively to accomplish common goals which cut across disciplines.

In November 2022, I<sup>2</sup>CNER is launching the “Center for Energy Systems Design,” referred to as “the Center”, under the “Carbon Neutral Energy Alliance” in collaboration with six research institutes\* to conduct research that contributes to the realization of carbon neutrality. The Center consists of six research teams: "Photo Conversion", "Electric Conversion", "Materials Conversion", "Materials, Storage and Transport", "Data Science", and "Energy Analysis". The Center’s goal is "energy system design, high-speed conversion of energy, and materials conversion through using data science" toward the realization of carbon neutrality. Details are explained on the third page of this document.

Within the Center, every team is led by a junior Principal Investigator (as illustrated in the diagram). These teams will collaborate with both I<sup>2</sup>CNER faculty members and faculty members from other collaborating research institutes. Moreover, each team will have the privilege of employing one postdoctoral researcher.

\*Six collaborative institutes:

Hokkaido University, Institute for Catalysis (ICAT)

Tohoku University, Advanced Institute for Materials Research (AIMR)

Tokyo Institute of Technology, Tokyo Tech Academy of Energy and Informatics (ISE)

Kumamoto University, Institute of Industrial Nanomaterials (IINa)

RIKEN Center for Sustainable Resource Science (CSRS)

National Institute for Materials Science (NIMS), Research and Services Division of Materials Data and Integrated System (MaDIS)

## CURRENT OPENINGS

CESD / I<sup>2</sup>CNER recruits one post-doctoral research associate who has doctoral degree or is expected to graduate in March 2024, for developing modulation excitation spectroscopy combined with IR, Raman and X-ray absorption spectroscopy for heterogeneous catalysis. The candidate will be working with Associate Professor Nobutaka Maeda in the Materia Conversion team. We are seeking candidates with sufficient knowledge of applied spectroscopy and heterogeneous catalysis.

In particular, candidates with knowledge in any of the following areas are preferred:

- (1) MATLAB programming
- (2) Application of modulation excitation spectroscopy for IR, Raman and X-ray absorption spectroscopy
- (3) Application of modulation excitation spectroscopy for heterogeneous catalysis

In addition to working as a postdoctoral research associate in the Center, the faculty will have the opportunity to interact with I<sup>2</sup>CNER researchers from all three research Thrusts. While preference will be given to candidates with the above scholarly expertise, I<sup>2</sup>CNER welcomes and will consider outstanding applicants with expertise also in other areas of relevance to the Institute.

#### **REQUIRED APPLICATION MATERIALS\***

1. Cover letter
2. Application form
3. Curriculum vitae which details research experience and interests
4. List of publications
  - \*Separate lists for refereed journals and conference proceedings.
  - \*Provide the public database information of your articles, such as “Web of Science” or “Scopus”
5. Names and contact information of three references

***\*All materials must be submitted in English.***

***\*Please note that you are requested to make these documents by separate files, and include the document numbers (no.1 through no.5) into each file name.***

#### **CONTRACT PERIOD**

August 1, 2024 - March 31, 2026 \*Expected starting date may vary depending on the selection process.  
Reappointment is possible upon annual evaluation (maximum: March 31, 2028).

#### **SALARY & STARTING DATE**

Annual Salary: 4 million JPY and above. (It will be commensurate with qualifications and experience.)  
The starting date is expected to be August 1<sup>st</sup>, 2024. (It depends on the recruitment process.)

#### **APPLICATION DEADLINE**

- **March 31, 2024, 15:00 (JST)**  
**※Please note that this call may be closed earlier if we receive sufficient applications.**

#### **APPLICATION SUBMISSION**

Please email your application materials via email attachment to: [wpi-office@i2cner.kyushu-u.ac.jp](mailto:wpi-office@i2cner.kyushu-u.ac.jp)  
Please fill in the email subject as follows;  
**I<sup>2</sup>CNER Postdoc Application (Material Conversion)**

#### **QUESTIONS?**

Please contact the I<sup>2</sup>CNER Administrative Office at: [wpi-office@i2cner.kyushu-u.ac.jp](mailto:wpi-office@i2cner.kyushu-u.ac.jp)  
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*\*Kyushu University is an Equal Opportunity/Affirmative Action Employer. The administration, faculty and staff embrace diversity and are committed to attracting qualified candidates who also embrace and value diversity and inclusivity.*

*\*The application materials will be used only for the purpose of this application, and personal information will not be disclosed, transferred, or loaned to any third party without justifiable reason.*

## CENTER FOR ENERGY SYSTEMS DESIGN

Achieving carbon neutrality requires major advancements and innovation in energy production, storage, transportation, utilization, and social systems. The Center for Energy Systems Design consists of six research teams: "Photo Conversion", "Electric Conversion", "Materials Conversion", "Materials, Storage and Transport", "Data Science", and "Energy Analysis". By dividing the roles, we will promote research on "energy system design and high-speed conversion of energy and materials based on data science" toward the realization of carbon neutrality. In addition, an important goal of the Center is the mentoring of graduate students and postdoctoral researchers toward career development.

Fast conversion is feature lacking in the current carbon-neutral energy technologies. We will conduct research aiming at "fast conversion of device or catalytic processes" in addition to "high efficiency" that has been current research goal thus far. The "Energy Analysis" team analyzes future social demands based on a thorough understanding of energy science and technology and contributes to setting research directions, goals, and milestones for research projects in collaboration with the technical research teams. The "Data Science" team supports each research team through data analytics to enable orders of magnitude performance increase.

Each research team is led by a junior PI (see diagram) and operates in collaboration with I<sup>2</sup>CNER faculty members, faculty members of the collaborating research institutes, and postdoctoral researchers. I<sup>2</sup>CNER will also contribute through large networks of international partners and the 6 collaborating institutions through their corresponding areas of expertise. Junior PIs are required to advance the objectives of their research teams in accordance with the goals of the Center.

Center for Energy Systems Design

