

HU-ACE NEWS LETTER

Advanced Core for Energetics, Hiroshima University

Vol. **74**
2023.2**Activities of the Core**

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| Feb. 9, 2023 | Assoc. Prof. Kindaichi introduced research on geothermal heat utilization at the General Assembly for Fund for Uplifting Hiroshima University and Energizing the Local Communities of Hiroshima. |
| Feb. 20, 2023 | The 105th Hiroshima University Biomass Evening Seminar (co-organized). |
| Feb. 22, 2023 | The 76th HU-ACE Steering Committee Meeting. |

We held a plenary session for the entire center.

On January 25, 2023, the plenary session of HU-ACE was held. The purpose of this meeting was to confirm the status of operations, exchange opinions among members of the base, and share the direction of our activities. At the same time, awards were given for the publication of treatises. At the center, three categories of commendations are being given for papers registered in 2022. On this occasion, Specially-Appointed Professor Nishida, Specially Appointed Assistant Professor Singh, and Professor Suzuki were awarded in the number of papers category, and Specially-Appointed Professor Nishida, Specially Appointed Assistant Professor Singh, and Professor Suzuki were awarded in the increase in number of papers category, and Specially Appointed Assistant Professor Singh, Professor Suzuki, and Professor Nakashimada were awarded in the thesis increase rate category. For reference, a graph showing the number of papers from 2012 to 2022 is attached below. Since the establishment of this center in 2017, an increase in the number of publications is clear.

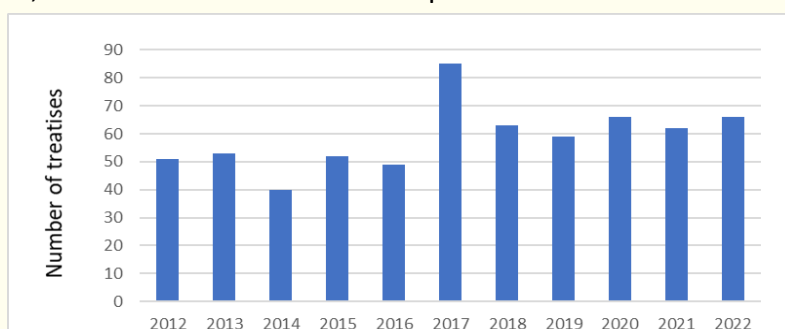


Figure: Changes in the number of treatises over time

Related events

The 7th International Symposium on Fuels and Energy (ISFE 2023) will be held on July 3-4, 2023. We are preparing for a hybrid event, with on-site participation at the Higashihiroshima Art and Culture Hall "Kurara", and online participation via ZOOM. Please visit the following ISFE 2023 website for more details.

<https://symposium2023.isfe.hiroshima-u.ac.jp>



Issued by Advanced Core for Energetics, Hiroshima University

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Member Introduction

No. 35

Kazuhiro MOCHIDZUKI

A-ESG Science and Technology Research Center, Hiroshima University,
Professor, specially appointed

Research Field : carbon recycling

Keyword : chemical engineering, separation technologies, reaction engineering,
process/system design



Greetings

Background and research field

In September 2022, I joined the A-ESG Science and Technology Research Center, in charge of carbon recycling. I am conducting research on carbon dioxide emission reduction and recycling. The A-ESG Science and Technology Research Center is to contribute to the development of carbon neutral technologies and the resolution of global/local problems through industry-government-academia collaboration, addressing ESG issues that academia should consider.

My research background is in chemical engineering. I have conducted research on unit operations, process design and system evaluation in the fields of environment, resources, and energy, focusing on efficient energy use in local communities. Especially, biomass utilization which contributes to the realization of a sustainable society, has been my major research theme. As for biomass utilization, I have been conducting the development of local production for a local consumption biomass system (regionally distributed small-scale system) that suits regional characteristics, considering thermochemical processes such as high-temperature and high-pressure water reactions, carbonization and gasification, and biochemical processes such as enzyme reactions and fermentation. I believe that it is quite useful to discuss "biomass utilization," which is based on absorbing and fixing carbon dioxide via photosynthesis, and "carbon recycling," which recovers carbon dioxide to recycle within human society, in parallel. In the future, for a social/industrial structure that minimizes the use of fossil resources, to obtain organic resources sustainably, carbon recycling is an essential technology which can convert carbon dioxide back into organic substances, as well as biomass utilization.

In carbon recycling such as methanation, the A-ESG Science and Technology Research Center conducts integrated research involving carbon dioxide separation/recovery, securing the hydrogen required (from natural energy, so-called green hydrogen), catalyst development, reactor design/operation, and the efficient utilization of thus-obtained organic compounds. We also discuss the design and evaluation of the overall process/system, to establish practical technologies for social implementation.

Biography

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| 1998-2001 | JSPS Research Associate, Institute of Industrial Science, the University of Tokyo. |
| 2001-2002 | Visiting Scholar/Junior Researcher, Hawaii Natural Energy Institute, University of Hawaii. |
| 2002-2008 | Visiting Associate Professor, Ebara-endowed Biomass Research Unit, the University of Tokyo. |
| 2008-2016 | Project Associate Professor, Collaborative Research Center for Energy Engineering, Institute of Industrial Science, the University of Tokyo. |
| 2016-Present | President/owner, Retoca Laboratory LLC. |
| 2022- Present | Professor, Specially Appointed, A-ESG Science and Technology Research Center, Hiroshima University |