KYUSHU UNIVERSITY

Q-PIT
Kyushu University Platform of Inter-/Transdisciplinary Energy Research

Energy Intelligence
Beyond Borders:
Aiming for the Future of
Green Innovation

KYUSHU UNIVERSITY

Energy Week 2022

Date [Mon] 24 Jan.– [Fri] 28 Jan., 2022

Venue KYUSHU UNIVERSITY Ito Campus, Hospital Campus, ACROS FUKUOKA

744 Motooka, Nishi-ku, Fukuoka 819-0395, JAPAN
3-1-1 Maidashi, Higashi-ku, Fukuoka 812-8582, JAPAN
1-1-1 Tenjin, Chuo-ku, Fukuoka 810-0001, JAPAN

* Held online (partially face to face)

https://q-pit-ew.kyushu-u.ac.jp/en/

KYUSHU UNIVERSITY

I²CNER

Q-PIT
Kyushu University Platform of Inter- / Transdisciplinary Energy Research

HYDROGENIUS
Research Center for Hydrogen Industrial Use and Storage

TREC-GT
Transdisciplinary Research and Education Center for Green Technologies, Kyushu University

C²RSC
Center of Coevolutionary Research for Sustainable Communities
持続的共進化地域創成拠点

＊Departments participating in Energy Week 2022, related to the energy research in Kyushu University

Contacts

Date	Program	Departments	Contact
1/24(Mon)	Q-PIT related programs	Kyushu University Platform of Inter-/ Transdisciplinary Energy Research	092-802-6644
1/25(Tue)・26(Wed)・28(Fri)	I²CNER related programs	International Institute for Carbon-Neutral Energy Research, Kyushu University	092-802-6935
1/26(Wed)	Collaboration Forum for Renewable Energy	Kyushu University Platform of Inter-/ Transdisciplinary Energy Research	092-802-6644
1/27(Thu)～28(Fri)	HYDROGENIUS related programs HYDROGENIUS・I²CNER Joint Research Symposium	Research Center for Hydrogen Industrial Use and Storage, Kyushu University	092-802-3924
1/28(Fri)	Chikushi Symposium	Transdisciplinary Research and Education Center for Green Technologies, Kyushu University	092-583-7947
1/28(Fri)	C²RSC Symposium	Center of Coevolutionary Research for Sustainable Communities, Kyushu University	092-802-6677

Contents

Message

President
Kyushu University

Tatsuro Ishibashi

I would like to thank you all for participating in "Energy Week 2022" hosted by Kyushu University (KU).

Fukuoka, where KU is located, is a place which has played a key role in energy industry in Japan. Fukuoka is, in fact, one of the first places in Asia to enter the Industrial Revolution. It has also played a role as a trade and interaction base between Japan and Asia. Looking at Kyushu as a whole, the region utilizes approximately 60% of decarbonized power sources including renewable energy. We can say that Kyushu is a leading region in terms of the effort toward "2050 carbon neutrality" which is the pledge made by the Japanese government in October 2020.

Kyushu University was selected as a Designated National University Corporation in November 2021 by the Minister of Education, Culture, Sports, Science and Technology (MEXT). Based on its concept, KU formulated "Kyushu University Vision 2030" and set our goal to become a University which drives social reform with its integrative knowledge. We identified social issues with highest priority to tackle, which are Decarbonization, Medicine and Health and Environment and Food. We will strive to solve diversified and complicated social issues and contribute to the realization of "sustainable society and diverse form of well-being" by integrating research of the university's departments; natural sciences, humanities and social sciences, and design.

Toward carbon neutrality, we will particularly utilize our strengths in such decarbonization energy research as hydrogen, carbon recycling, and renewable energy. We will promote carbon-neutrality in collaboration with local communities, and with a cross university research institute, the Platform of Inter-/Transdisciplinary Energy Research (Q-PIT) as a core institution. One of the example of our efforts is the "Kyushu Area Renewable Energy Cooperation Committee" that we established in September 2021, where national universities in Kyushu have come together as a collaborative foundation for energy-related research. We are planning to promote a decarbonized society and deployment of renewable energy in Kyushu in cooperation with industry and local governments. In the 6th Energy Week this year, we will be holding the first "Renewable Energy Collaboration Forum."

The Energy Week 2022 is being held under the theme; Energy Intelligence Beyond Borders: Aiming for the Future of Green Innovation. Focusing on issues related to green innovation, we will be inviting prominent speakers from domestic and overseas academic institutions and companies. Also various events will be taking place such as symposiums, workshops and research presentations by young researchers and doctoral students from KU's International Institute for Carbon-Neutral Energy (I^2CNER), HYDROGENIUSES, Coevolutionary Research for Sustainable Communities (C^2RSC), Transdisciplinary Research and Education Center for Green Technologies.

We sincerely look forward to your participation in the program events and hope that you take this opportunity to deepen interactions between researchers and discussions of research results.

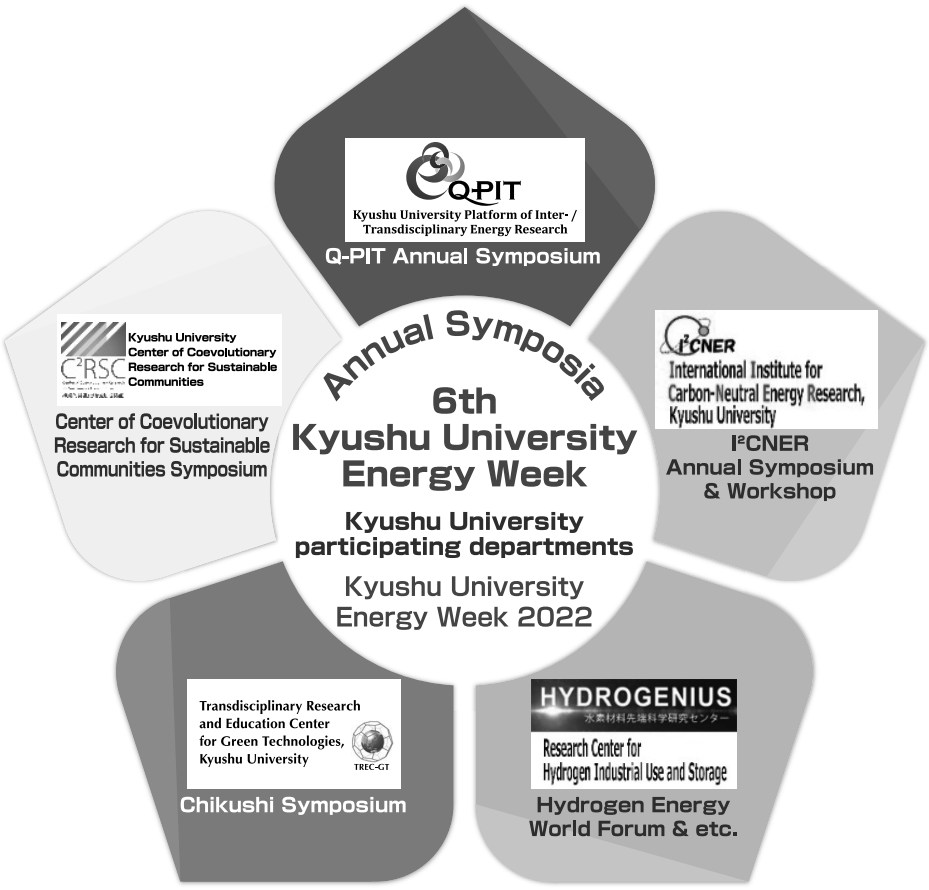
About Kyushu University Energy Week

What's Kyushu University Energy Week ?

Energy Week is an annual international conference organized by Kyushu University. With a focus on "future energy", it features a variety of academic workshops, symposia, invited lectures from prominent energy researchers, as well as public events that bring together prominent experts from academia, industry and government. Another aim of Energy Week is the promotion of early-career researchers through a poster session.

The conference is considered to be Kyushu University's main venue to promote exchange among researchers and practitioners in the energy sector, and to highlight its role as an international hub for sustainable energy research.

Energy Week 2022 will take place primarily online again this year to prevent the spread of Covid-19.

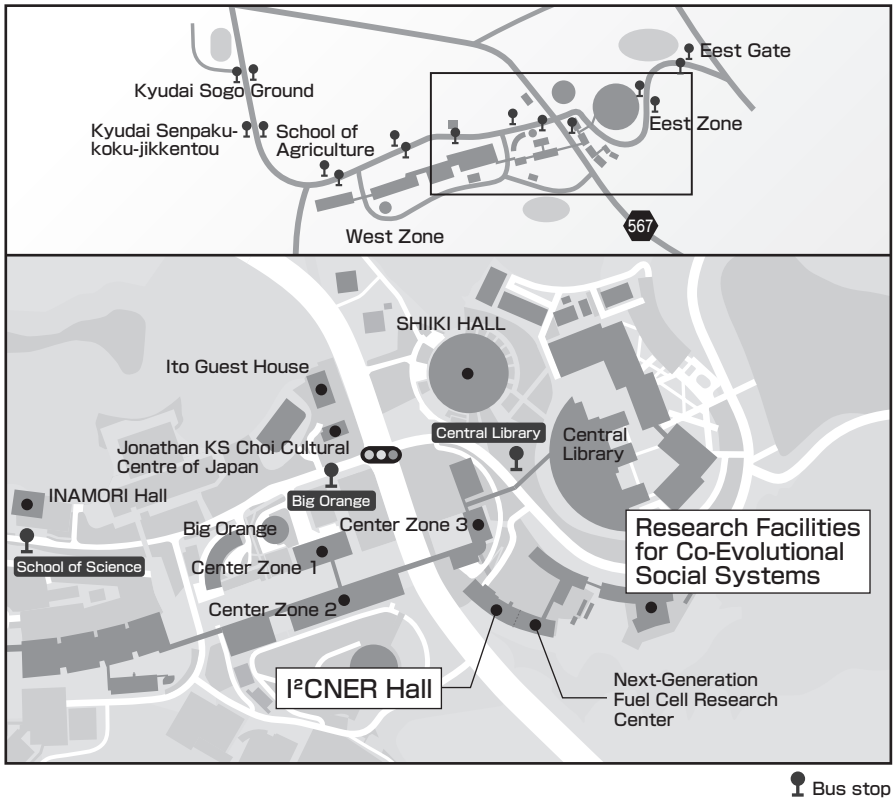


Venue

KYUSHU UNIVERSITY　Ito Campus

● I²CNER Hall　● Research Facilities for Co-Evolutional Social Systems

744 Motooka, Nishi-ku, Fukuoka, 819-0395, JAPAN



★ From Fukuoka Airport

Fukuoka Airport → (Subway Kuko Line) → Meinohama Station (※1 Transfer JR Chikuhi Line) → Kyudai-Gakkentoshi Station →※2 Showa Bus (via Susenji or Yokohamanishi or Gakuendori) → Ito Campus

★ From Hakata or Tenjin Station

By subway

Hakata Station (Subway Kuko Line) → Tenjin → Meinohama (※1 Transfer JR Chikuhi Line) → Kyudai-Gakkentoshi Station →※2 Showa Bus (via Susenji or Yokohamanishi or Gakuendori) → Ito Campus

※ 1 Alternatively, board a train bound for Nishikaratsu or Chikuzen-Maebaru, which eliminates the need to transfer at Meinohama Station.

※ 2 For West zone → bus stop No.3

Get off at the bus stop "Big Orange Mae" → I²CNER or Research Facilities for Co-Evolutional Social Systems

※ 2 For East zone → bus stop No.4

Get off at the bus stop "Center of library → I²CNER or Research Facilities for Co-Evolutional Social Systems

By bus

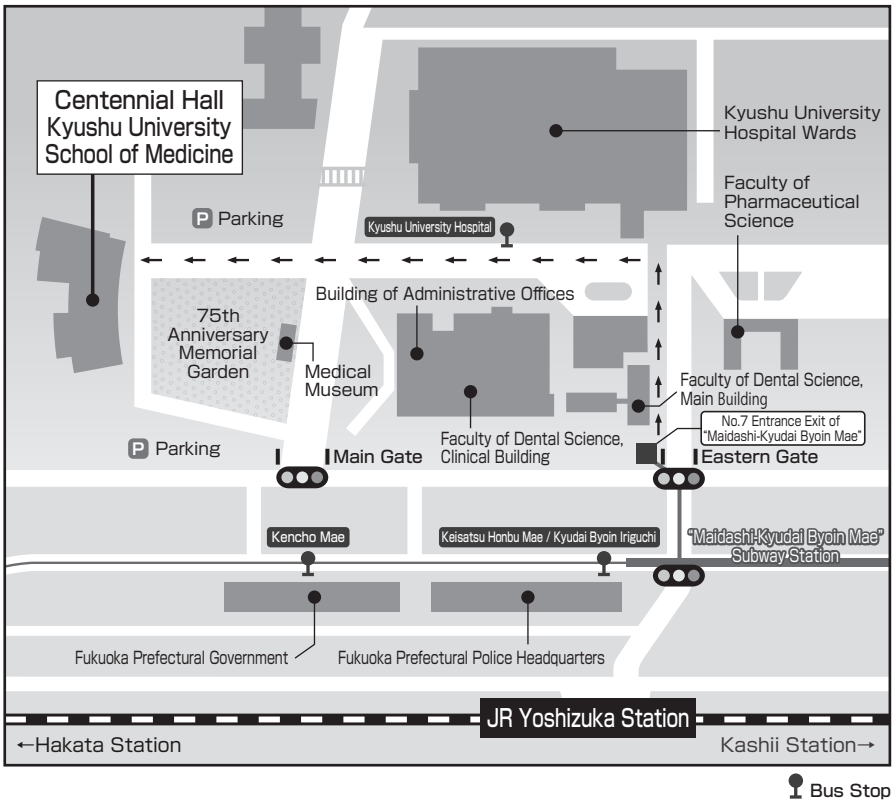
Bus stop of Hakata StationA (Nishitetsu Bus for Kyudai Ito Campus) → Bus stop of Solaria Stage →※3 Ito Campus

※ 3 Get off at the bus stop "Big Orange Mae" → I²CNER or Research Facilities for Co-Evolutional Social Systems

Kyushu University Hospital Campus

● Centennial Hall Kyushu University School of Medicine

1-1 Maidashi 3-chome Higashi-ku, Fukuoka 812-8582, JAPAN



★ From Fukuoka Airport

Fukuoka Airport → (Subway Kuko Line) → Nakasu Kawabata Station (Transfer Subway Hakozaki Line) → Maidashi-Kyudai Byoin Mae Station → Kyushu University Hospital Campus → Centennial Hall Kyushu University School of Medicine

★ From Hakata Station

By subway

Hakata Station (Subway Kuko Line) → Nakasu Kawabata Station (Transfer Subway Hakozaki Line) → Maidashi-Kyudai Byoin Mae Station → Kyushu University Hospital Campus → Centennial Hall Kyushu University School of Medicine

By bus

Bus stop of Hakata Center buildingE (Nishitetsu Bus for Chiyomachi) → Bus stop of Kyudai Byoin → Kyushu University Hospital Campus → Centennial Hall Kyushu University School of Medicine

★ From Tenjin Station

By subway

Tenjin Station (Subway Hakozaki Line for Kaizuka) → Maidashi-Kyudai Byoin Mae Station → Kyushu University Hospital Campus → Centennial Hall Kyushu University School of Medicine

ACROS Fukuoka ● International Conference Hall/4F

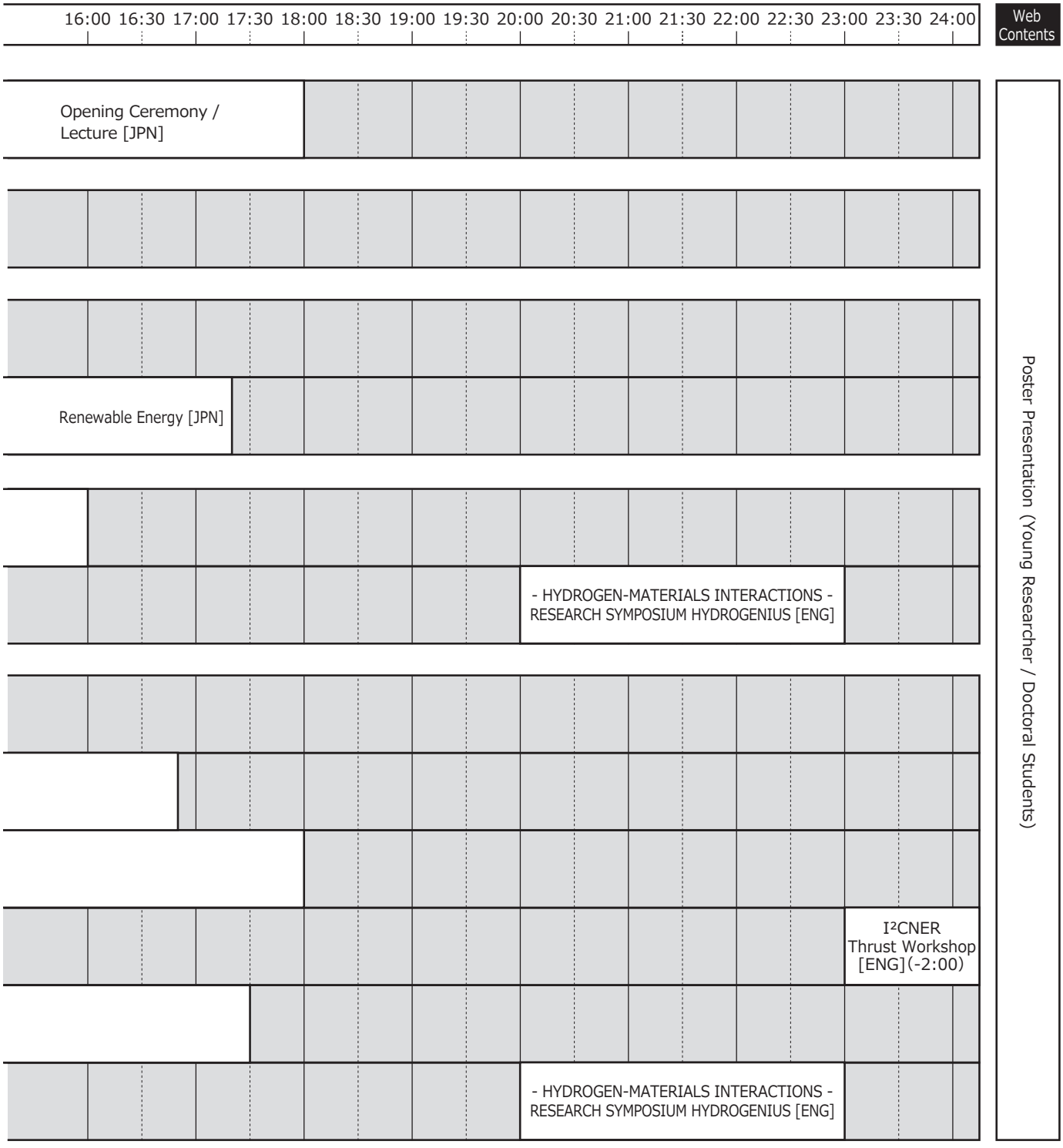
1-1-1 Tenjin, Chuo-ku, Fukuoka, 810-0001, JAPAN

Program & Schedule

Date	Dept.	9:00 – 15:30
1/24 (Mon)	Q-PIT	Q-PIT Prologue Session [JPN/ENG] / Q-PIT Plenary Session:
1/25 (Tue)	I²CNER	I²CNER Annual Symposium [ENG]
1/26 (Wed)	I²CNER & IMI	I²CNER-IMI International Workshop [ENG]
	Q-PIT	Collaboration Forum for
1/27 (Thu)	HYDROGENIUS	Hydrogen Energy and Fuel Cell Forum in Kyushu and International Hydrogen Energy Development Forum 2022 [JPN]
1/28 (Fri)	TREC-GT	Chikushi Symposium [JPN]
	HYDROGENIUS	International Symposium of Hydrogen Polymers Team, HYDROGENIUS [ENG]
	HYDROGENIUS & I²CNER	-2022 HYDROGENIUS & I²CNER TRIBOLOGY SYMPOSIUM - HYDROGENIUS AND I²CNER JOINT RESEARCH SYMPOSIUM [ENG]
	I²CNER	
	C²RSC (COI)	Kyushu University COI Center of Coevolutionary Research for Sustainable Communities (C²RSC) Symposium [JPN]
	HYDROGENIUS	

※Q-PIT: Kyushu University Platform of Inter/Transdisciplinary Energy Research
※I²CNER: International Institute for Carbon-Neutral Energy Research
※HYDROGENIUS: Research Center for Hydrogen Industrial Use and Storage
※TREC-GT: Transdisciplinary Research and Education Center for Green Technologies, Kyushu University
※C²RSC: Center of Coevolutionary Research for Sustainable Communities
※IMI: Institute of Mathematics for Industry

* Above Program is subject to change without prior notice.


16:00 16:30 17:00 17:30 18:00 18:30 19:00 19:30 20:00 20:30 21:00 21:30 22:00 22:30 23:00 23:30 24:00
Web Contents
Opening Ceremony / Lecture [JPN]
Renewable Energy [JPN]
- HYDROGEN-MATERIALS INTERACTIONS - RESEARCH SYMPOSIUM HYDROGENIUS [ENG]
I²CNER Thrust Workshop [ENG](-2:00)
- HYDROGEN-MATERIALS INTERACTIONS - RESEARCH SYMPOSIUM HYDROGENIUS [ENG]
Poster Presentation (Young Researcher / Doctoral Students)

Kyushu University Platform of Inter-/Transdisciplinary Energy Research (Q-PIT) <Prologue Session, Plenary Session >

<Date> 9:00-18:00, 24th January 2022
<Venue> I²CNER Hall, I²CNER Bldg.1, Ito Campus, Kyushu University (Live streaming venue)
<Language> Japanese/English (Prologue Session), Japanese (Plenary Session)
<Theme> " Toward the Creation of Green Innovation Technology "

■ **Prologue Session** < Moderator > Prof. Akari Hayashi, Q-PIT, Kyushu University

Time	Program and Speaker
09:00-09:05	About Q-Energy Innovator Fellowship, Junichi Miyamoto Hydrogen Research Encouragement Award Prof. Kazunari Sasaki, Senior Vice President, Kyushu University
09:05-10:35	Report of Q-Energy Innovator Fellowship (6) : 15min.(Presentation 10min., Q&A 5min.)
10:35-10:45	Break
10:45-12:30	Report of Q-Energy Innovator Fellowship (6) Report of Hydrogen Research Encouragement Award Recipient (1)

■ **Plenary Session** < Moderator > Prof. Kentaro Yoshida, Q-PIT, Kyushu University

Time	Program and Speaker
13:30-13:40	**Opening Ceremony** Welcome Address, Dr. Tatsuro Ishibashi, President of Kyushu University
13:40-14:25	**Lecture 1:** ● Net zero emissions by 2050, scenario and challenges Dr. Sumie Nakayama, J-POWER, Executive Officer / Kyoto University, Adjunct Professor
14:30-15:25	**Lecture 2:** ● Outline of the Green Innovation Fund Mr. Yasuhiro Kasai, Ministry of Economy, Trade and Industry (METI)
15:30-16:15	**Lecture 3:** ● Action plan toward Kyuden Group carbon neutrality Mr. Norihiro Nakamura, Kyushu Electric Power Co., Inc.
16:15-16:35	Break
16:35-17:50	**Panel Discussion** Theme : About future initiatives for green innovation Moderator : Prof. Kazunari Sasaki, Senior Vice President, Kyushu University Panelists : Dr. Sumie Nakayama, J-POWER Mr. Norihiro Nakamura, Kyushu Electric Power Co., Inc. Prof. Junichiro Hayashi, Kyushu University Prof. Hiroshige Matsumoto, Kyushu University Prof. Akihito Ozaki, Kyushu University
17:50-18:00	**Closing Remarks** Dr. Yoshio Hisaeda, Executive Vice President, Kyushu University

■ **Web contents (released during EW2022)**
Poster Presentation By Young researchers, Doctoral students

Lecture 1

Net zero emissions by 2050, scenario and challenges

Sumie Nakayama

J-POWER, Executive Officer / Kyoto University, Adjunct Professor

Lecture 2

Outline of the Green Innovation Fund

Yasuhiro Kasai

Director, Carbon Neutrality Project Promotion Office
Industrial Science and Technology Policy and Environment Bureau
Ministry of Economy, Trade and Industry (METI)

Lecture 3

Action plan toward Kyuden Group carbon neutrality

Norihiro Nakamura

General Manager, Planning & Balance Optimization Division, Energy Service Headquarters, Kyushu Electric Power Co., Inc.

Panel Discussion

Moderator

Kazunari Sasaki

Professor
Senior Vice President, Kyushu University

Panelists

Junichiro Hayashi

Professor
Institute for Materials Chemistry and Engineering, Kyushu University

Panelists

Hiroshige Matsumoto

Professor (Associate Director)
International Institute for Carbon-Neutral Energy Research, Kyushu University

Panelists

Akihito Ozaki

Professor
Faculity of Human-Enviroment Studies, Kyushu University

Lecture 1

Net zero emissions by 2050, scenario and challenges

J-POWER, Executive Officer
Kyoto University, Adjunct Professor

Sumie Nakayama

The Glasgow Climate Pact, decided at COP26 in November 2021, raised the position of the 1.5℃ target from the effort target under the Paris Agreement and emphasized the need for carbon neutrality in 2050. Prior to COP26, IEA published a report named “Net Zero by 2050” in May that shows how the global energy supply and consumption are to be to achieve net zero by 2050(= carbon neutral). The report also lists road maps by technology and by sector to reach “net zero by 2050”. In this presentation, I will give an overview of the 2050 Net Zero Scenario (NZE) described in the report and various challenges that can be seen from original analysis.

In short, NZE is the perfect combination of some major measures; behavior change is used to save energy thoroughly, electricity is decarbonized by renewable energy, maximum electrification is performed for all purposes, and hydrogen or bioenergy is used for areas that cannot be electrified is offset by CCUS. However, there are various challenges including the assumed investment amount and the maturity of emission reduction technologies. The discussion how energy supply and demand to be in Japan to achieve 2050 carbon naturality target has been continued at relevant committees under the government, but IEA shows its assumption in the APS of World Energy Outlook 2021 (a scenario assuming that all countries that have declared carbon neutrality will achieve their targets). I would like to show how it is illustrated and to share its implication.

Lecture 2

Outline of the Green Innovation Fund

Director, Carbon Neutrality Project Promotion Office
Industrial Science and Technology Policy and Environment Bureau
Ministry of Economy, Trade and Industry (METI)

Yasuhiro Kasai

The realization of carbon neutrality in 2050 will require a significant acceleration of existing government policies and implementation, and will not be possible without extraordinary efforts. Therefore, it is necessary to significantly accelerate the current efforts such as structural transformation of the energy and industrial sectors, and innovation through bold investment. To this end, the Green Innovation Fund has been established to provide continuous support from R&D and demonstration to social implementation for 10 years to companies and other organizations that share ambitious and specific goals with government and address them as business challenges.

Aiming to efficiently and effectively make use of this fund, METI inaugurated the Committee on the Green Innovation Project with participation of business leaders and experts from various fields in February 2021. Since then, the committee has held discussions on basic policies for managing and operating the fund project as a whole. Against this backdrop, METI formulated the “Basic Policies for the Project for the Green Innovation Fund” based on the discussion results of the committee. METI, NEDO and other related ministries will operate each fund project in accordance with the Basic Policies.

The characteristic point of this fund defined in Basic Policies is requirement of commitment from top management. In order to ensure that the results of R&D are steadily implemented in society, a mechanism has been introduced to require top management to commit utilizing every capital to the project as one of the most critical business issues.

Lecture 3

Action plan toward Kyuden Group carbon neutrality

General Manager, Planning & Balance Optimization Division, Energy Service Headquarters, Kyushu Electric Power Co., Inc.

Norihiro Nakamura

The Kyushu Electric Power Group (Kyuden Group) announced the Kyuden Group Carbon Neutral Vision 2050 in April 2021 and declared that we will tackle the challenge of achieving carbon neutrality by 2050, aspiring to become a corporate group that leads Japan's decarbonization representing Kyushu.
Our vision has two pillars; 1. Low-carbon or decarbonized power supply, and 2. Promotion of electrification.

We formulated the Action Plan on November 30, 2021 to realize Kyuden Group Carbon Neutrality.
The key points are;
1. The goals for 2050 are clarified
2. Among the management goals for 2030, we revised specifically the environmental goals upward
3 We formulated a concrete action plan including KPIs to achieve these goals

1. Our goals for 2050 are;
・To achieve "net zero GHG" from the entire supply chain emitted through the business activities of the Kyuden Group
・To promote electrification to the maximum extent and supply environmentally-friendly energy in a stable manner to society and contribute to GHG reduction of society
・To achieve "carbon minus" of the Kyushu Electric Power Group soonest possible through above two schemes

2. We revised the environmental goals for 2030 upward from the initial target of 50% reduction from FY2013 level and set separate targets for energy supply and demand.
The energy supply target is line with the goal of 2050 and it is 60% reduction of GHG emissions from 2013 through the business activities of all the Kyuden Group including the supply chain (65% reduction in domestic business).

As an energy company with its business bases throughout Kyushu, we set the energy demand target of 100% electrification in both business sector and household by 2050. To realize this, we aim to achieve 70% electrification in the household and 60% in the business by 2030.

3. Action plan; we formulated a concrete action plan up until 2030 as we consider the first 10 years until 2030 is an especially critical period to achieve the goal of 2050.
With this action plan, we aim to accelerate both of two pillars, "low-carbon or decarbonization of power sources" and "promotion of electrification."

Kyushu University Platform of Inter-/Transdisciplinary Energy Research (Q-PIT)

<Poster Presentation >

Poster presentations by Awardees of Q-PIT 2022 Support Program for Young Researchers and Doctoral Students.

<Date> Post by 24th January 2022

<Language> English and Japanese

<U R L> https://q-pit-ew.kyushu-u.ac.jp/en/poster

【Awardees of Young Researchers】

No. of Poster	Affiliation	Name	Title of Research
Young-1	Faculty of Design	井上 大介	微小流路による微小管集団運動の制御
Young-2	INAMORI Frontier Research Center	兵頭 潤次	SrSn0.8Sc0.2O3-δにおける構造相転移誘起プロトン導入反応の発見
Young-3	International Institute for Carbon-Neutral Energy Research (I2CNER)	ISLAM MD AMIRUL	Pore tailored and surface modified functional adsorbents for selective CO2 capture from atmosphere
Young -4	International Institute for Carbon-Neutral Energy Research (I2CNER)	Dino Klotz	Opto-Ionics – Dynamic Investigation of the Mechanism behind the Increased Ionic Conductivity under Light Illumination
Young -5	Faculty of Science	門田 慧奈	バイオマス増産を可能にする高効率 CO2 吸収型次世代植物の開発
Young -6	Faculty of Engineering	Song Juntae	Photoelectrochemical water splitting system for biocatalytic hydrogen production
Young -7	Institute for Materials Chemistry and Engineering	古澤 将樹	テトラジン系活物質を用いた Na イオン二次電池

【Awardees of Doctoral Students】

No. of Poster	Affiliation	Name	Title of Research
Gold-1	Graduate School of Economics	中石 知晃	Potential of Premature Death Mitigation through Efficiency Improvements in Coal Power Plants in China
Silver-2	Graduate School of Engineering	小松原 建人	再生可能エネルギーに対する支払意思に影響を与える要因
Bronze-3	Graduate School of Science	宮崎 栞	希土類錯体による高効率電界発光素子開発に向けた発光機構解明
Bronze -4	Graduate School of Bioresource and Bioenvironmental Sciences	池永 照美	蚕とアリと人の coworking system
Bronze -5	Graduate School of Engineering	七條 慶太	太陽光を有効利用できる B12 ハイブリッド触媒の開発
Bronze -6	Graduate School of Engineering	辻川 皓太	高濃度 Sc 置換したペロブスカイト型酸化物のプロトン伝導度評価

Bronze -7	Graduate School of Engineering	矢野　喜男	応力を視覚認知できる発光性メカノクロミックポリマーの開発
Bronze -8	Graduate School of Integrated Frontier Sciences	SELYANCHYN Olena	Study of nanocellulose crosslinking with organic acids for improved proton conductivity in bio-based proton exchange membranes
Bronze -9	Graduate School of Science	西郷　将生	Pump-push-probe 分光を用いた励起状態ダイナミクス解明
Encouragement-10	Interdisciplinary Graduate School of Engineering Sciences	Marco LAO	Combined Desiccant Dehumidification and Dew Point Evaporative Cooling (CoDECS): A Potential Greener and Cheaper Alternative to Compressor-based Air Conditioners
Encouragement-11	Interdisciplinary Graduate School of Engineering Sciences	一本杉　旭人	核融合原型炉におけるトリチウム移行シミュレータの構築
Encouragement-12	Graduate School of Economics	鬼頭　みなみ	ポストコロナ社会における航空産業の 2050 年炭素排出目標に関する達成経路分析
Encouragement-13	Graduate School of Engineering	河原　康仁	鉄鋼材料における炭素クラスターを介した炭化物の析出機構の直接観察
Encouragement-14	Graduate School of Integrated Frontier Sciences	Muhammad Irfan Maulana Kusdhany	Establishing a Quantitative Structure-Property Relationship for Porous Carbons in CO2 Capture Applications
Encouragement-15	Graduate School of Engineering	Nan　Zhang	Reverse NH3 concentration effect on NH3 induced hydrogen embrittlement
Encouragement-16	Graduate School of Integrated Frontier Sciences	沈　小烽	可視-近赤外応答型色素増感剤を用いたシート型色素増感光触媒による水素製造
Encouragement-17	Interdisciplinary Graduate School of Engineering Sciences	上野　虎太郎	鉄鋼材料のせん断型変態組織解析方法の開発
Encouragement-18	Interdisciplinary Graduate School of Engineering Sciences	Tavoos Hassan Bhat	Co-benefits assessment of zero-emission public urban transport strategy in Delhi (India)
Encouragement-19	Graduate School of Science	笠　僚宏	光エネルギー変換デバイスの高効率化を目指した有機分子の超長距離励起子拡散
Encouragement-20	Interdisciplinary Graduate School of Engineering Sciences	Chairunnisa	Comparative study of activated charcoals and silica gels in dehumidification technology
Encouragement-21	Interdisciplinary Graduate School of Engineering Sciences	陳　伊新	Ca(BH4)2 のリシエーション過程における固体電解質自己生成反応
Encouragement-22	Interdisciplinary Graduate School of Engineering Sciences	Yang Zhaosheng	Performance Enhancement of an Adsorption Heat Exchanger with Aluminium Foam Coated with Activated Carbon
Encouragement-23	Interdisciplinary Graduate School of Engineering Sciences	岡本 直也	宇宙線ミュオンを用いた断層撮像手法による大深度地下トンネル工事を対象とした防災システムの開発
Encouragement-24	Graduate School of Integrated Frontier Sciences	Enes Muhammet CAN	Gas Diffusion Layers with Patterned Wettability for Advanced Water Management in Polymer Electrolyte Fuel Cells

Encouragement-25	Graduate School of Economics	松嶋 そら	産業連関表の実質化法が構造分解結果に与える影響
Encouragement-26	Graduate School of Economics	前野 啓太郎	グローバルサプライチェーンの再構築を通じた CO2 排出削減
Encouragement-27	Interdisciplinary Graduate School of Engineering Sciences	徐 祥源	環境対応型の吸着式ヒートポンプの評価と開発
Encouragement-28	Graduate School of Science	齊藤 圭太	光駆動液晶液滴の回転運動
Encouragement-29	Graduate School of Economics	吉澤 大佑	カーシェアリングサービスの拡大に伴う環境への影響
Encouragement-30	Interdisciplinary Graduate School of Engineering Sciences	Yu Hao	Activated carbon derived from pine cone
Encouragement-31	Interdisciplinary Graduate School of Engineering Sciences	MALEHMIRCHEGINI LADAN	Demand Response Modeling Development for Urban Customers in a Smart Grid Electricity Market
Encouragement-32	Graduate School of Science	高山 久美	地球大気と宇宙プラズマの遷移領域におけるエネルギー変化の解明

INTERNATIONAL INSTITUTE FOR CARBON-NEUTRAL ENERGY RESEARCH

2022 I²CNER ANNUAL SYMPOSIUM:
CARBON MANAGEMENT
INCLUDING NEGATIVE EMISSION TECHNOLOGIES

Virtual Symposium

TUESDAY, JANUARY 25, 2022, 9:00AM -12:20PM

9:00 a.m. Opening Remarks
Dr. Tatsuro Ishibashi, *President, Kyushu University*
Dr. Akira Ukawa, *WPI Program Director*

9:15 a.m. Introduction
Prof. Petros Sofronis, *Director, I²CNER, Kyushu University*

9:30 a.m. Invited Lecture A
"Carbon Management Projects in the Moonshot Goal 4"
Dr. Kenji Yamaji, *President and Director-General, Research Institute of Innovative Technology for the Earth (RITE)/ Program Director, Moonshot Research and Development Program/Moonshot Goal 4*

10:20 a.m. Invited Lecture B
"Energy for sustainability: Analysis with Inclusive Wealth"
Prof. Shunsuke Managi, *Distinguished Professor, Director of Urban Institute, Kyushu University*

11:00 a.m. Invited Lecture C
"Title: TBC"
Prof. Paul J. A. Kenis, *Elio Eliakim Tarika Endowed Chair in Chemical Engineering, University of Illinois Urbana-Champaign*

11:40 a.m. Invited Lecture D
"A Negative Emission (BeCCS) Plant in the middle of Stockholm"
Dr. Fabian Levihn, *KTH Royal Institute of Technology, Stockholm and Head of R&D at Stockholm Exergi* **pre-recorded*

"Functional Materials for CO_2 conversion"
Prof. Joydeep Dutta, *Chair of Functional Materials at KTH Royal Institute of Technology, Stockholm* *pre-recorded*

12:20 a.m. End of the symposium

INTERNATIONAL INSTITUTE FOR CARBON-NEUTRAL ENERGY RESEARCH
&
INSTITUTE OF MATHEMATICS FOR INDUSTRY

WIRELESS POWER TRANSFER: TECHNOLOGIES FOR SMART SOCIETIES

I²CNER-IMI JOINT INTERNATIONAL WORKSHOP

DATE: JANUARY 26, 2022
TIME: 9:00 AM – 12:00 PM (JAPAN TIME)
VENUE: ZOOM MEETING

Time	Speaker	Affiliation	Title
9:00 – 9:10	Petros Sofronis	Director of I²CNER, Kyushu University, and University of Illinois, USA	Opening speech
9:15 – 9:55	Tomoyuki Miyamoto	Tokyo Institute of Technology	Latest trends in research on optical wireless power transmission for small equipment to mobility
9:55 – 10:35	Naoki Shinohara	Kyoto University	Far-Field Wireless Power Transfer - Current Status and Future
10:35 – 11:15	Ramesh Pokharel	Kyushu University	Overview of Metamaterial/Metasurfaces and Their Application in Wireless Power Transfer System to Biomedical Applications
11:15 – 11:55	Nguyen Dinh Hoa	Kyushu University	Wireless power transfer and renewables for energy mobility, flexibility, and sustainability
11:55 – 12:00	Osamu Saeki	Director of IMI, Kyushu University	Closing remarks

for Registration:

Kyushu Area Renewable Energy Cooperation Committee
<Collaboration Forum for Renewable Energy>

<Date> 13:30-17:20, 26th January 2022
<Venue> Held online（YouTube Live）
<Language> Japanese

< Moderator > Prof. Tomofumi Tada, Q-PIT, Kyushu University

時間	プログラム・講演者
13:30-13:40	**開会挨拶** 九州大学総長 石橋 達朗
13:40-14:30	**各大学の取組**（1 大学×10 分） 1. **カーボンニュートラルに向けた持続可能な開発のための教育の展開** 福岡教育大学 理事・副学長 相部 保美 2. **九州大学で取り組む脱炭素エネルギー先導人材の育成** 九州大学 エネルギー研究教育機構教授 林 灯 3. **低炭素社会を体感・体現する未来思考キャンパスの構築** 九州工業大学 理事・総括副学長 三谷 康範 4. **佐賀大学が取り組む海洋エネルギー研究の「知の世界展開」とカーボンニュートラル** 佐賀大学 海洋エネルギー研究センター長・教授 池上 康之 5. **地域のサステナビリティとレジリエンスに貢献する電気自動車の開発（EV バス、EV マイクロバス等）** 熊本大学 大学院先端科学研究部（工学系）シニア准教授 松田 俊郎
14:30-14:45	Break（休憩）
14:45-15:25	**各大学の取組**（1 大学×10 分） 6. **大分大学重点領域研究推進プロジェクト「脱炭素化のための水素および合成燃料の高度利用技術に関する研究」** 大分大学 理工学部教授 田上 公俊 7. **地域資源を活かしたカーボンニュートラルへの取り組み** 宮崎大学 工学部副学部長（研究）・教授 西岡 賢祐 8. **超高輝度・省エネ型 LED 照明によるカーボンニュートラル社会実現への貢献** 鹿児島大学 理事・副学長（企画・社会連携担当） 岩井 久 9. **琉球大学における再生可能エネルギーの研究取組み** 琉球大学 理事・副学長 牛窪 潔
15:25-15:40	Break（休憩）
15:40-17:10	**パネル討論/90 分間** モデレーター: 九州大学副学長 佐々木 一成 パネリスト ： 九州大学（林）、九州工業大学（三谷）、佐賀大学（池上）、熊本大学（理事・副学長：大谷）、大分大学（学長特命補佐：小田）、宮崎大学（西岡）、鹿児島大学（岩井）、琉球大学（牛窪）
17:10-17:20	**閉会挨拶** 九州大学理事・副学長 久枝 良雄

University of Teacher Education Fukuoka

Yasumi Aibe
Executive Director and Vice-President

Kyushu University

Akari Hayashi
Professor
Platform of Inter-/
Transdisciplinary Energy Research

Kyushu Institute of Technology

Yasunori Mitani
Executive Director and General Vice President

Saga University

Yasuyuki Ikegami
Professor (Director)
Institute of Ocean Energy

Kumamoto University

Jun Otani
Executive Director and Vice-President

Toshirou Matsuda
Senior Associate Professor
Faculty of Advanced Science and Technology

Oita University

Kazuhiro Oda
Professor
Special advisor to the president

Kimitoshi Tanoue
Professor
Faculty of Science and Technology

University of Miyazaki

Kensuke Nishioka
Professor
Dean of the Faculty of Engineering

Kagoshima University

Hisashi Iwai
Executive Director and Vice-President

University of the Ryukyus

Kiyoshi Ushikubo
Executive Director & Vice President

九州水素・燃料電池フォーラム ＆ 水素先端世界フォーラム 2022

Hydrogen Energy and Fuel Cell Forum in Kyushu & International Hydrogen Energy Development Forum

<開催日時> 2022 年 1 月 27 日（木）13:00- 16:00
<配信方法> オンライン配信 (You Tube Live)
< 言　語 > 日本語

時間	プログラム・講演者
13:00-13:05	開会
13:05-13:15	**主催者挨拶** 経済産業省 九州経済産業局長 後藤 雄三 福岡水素エネルギー戦略会議 顧問 福岡県知事 服部 誠太郎

Session 1 -九州水素・燃料電池フォーラム 2022-

13:15-13:45	**講演** 『タイトル未定』 経済産業省資源エネルギー庁 省エネルギー・新エネルギー部 新エネルギーシステム課長 日野 由香里
13:45-14:15	**講演** 『タイトル未定』 トヨタ自動車株式会社 トヨタ ZEV ファクトリー 商品 ZEV 製品開発部 主査 浜田 成孝
14:15-14:45	**講演** 『タイトル未定』 国立大学法人九州大学 副学長兼水素エネルギー国際研究センター長 佐々木 一成
14:45-14:50	休憩

Session 2 -水素先端世界フォーラム 2022-

14:50-15:20	**講演** 『水素エネルギー本格普及に向けた NEDO の事業展開』 国立研究開発法人新エネルギー・産業技術総合開発機構 燃料電池・水素室長 大平 英二
15:20-15:50	**講演** 『ENEOS の水素社会実現への取組み～水素サプライチェーン構築に向けて』 ENEOS 株式会社 水素事業推進部 副部長 前田 征児
15:50-16:00	質疑応答

- HYDROGEN-MATERIALS INTERACTIONS -

HYDROGENIUS, I²CNER, HYDROMATE AND SINTEF JOINT RESEARCH SYMPOSIUM 2022

HYDROGENIUS FATIGUE AND FRACTURE DIVISION,
I²CNER ADVANCED ENERGY MATERIALS DIVISION,

< Date and hour > January 27th, 20:00—23:00 (JST)
January 28th, 20:00—23:00 (JST)
< Venue > Online (ZOOM meeting)
< Language > English

Day 1 Program (January 27th (Thu), 20:00—23:00)

Time	Presentation Title and Speaker
20:00-20:10	Opening Remarks **Hisao Matsunaga** (Kyushu University, Japan)
	Session 1 (Chair: Hisao Matsunaga, Kyushu University)
20:10-20:50	Invited talk 1: Hydrogen embrittlement resistance of X65 pipeline steels - Results from the HyLINE project **Vigdis Olden** (SINTEF, Norway)
20:50-21:30	Invited talk 2: TBD **Yoshinori Ono** (National Institute for Materials Science, Japan)
21:30-21:40	Break
	Session 2 (Chair: Alexei Vinogradov, NTNU)
21:40-22:20	Invited talk 3: Hydrogen embrittlement in multiphase TRIP steels: from fundamental understanding to H-tolerant microstructure design **Binhan Sun** (Max-Planck-Institut für Eisenforschung GmbH, Germany)
22:20-23:00	**I**nvited talk 4: Hydrogen-assisted fatigue and fracture of carbon steels and the implications of blending hydrogen into natural gas transmission infrastructure **Chris San Marchi** (Sandia National Laboratories, USA)

Day 2 Program (January 28th (Fri), 20:00—23:00)

Time	Presentation Title and Speaker
	Session 3 (Chair: Junichiro Yamabe, Fukuoka University)
20:00-20:40	Invited talk 5: On the hydrogen embrittlement of Inconel 718 alloy produced by laser-based powder bed fusion **Shuai Wang** (Southern University of Science & Technology, China)
20:40-21:20	Invited talk 6: Hydrogen associated decohesion and localized plasticity in austenite-ferrite lightweight steel **Xizhen Dong** (Max-Planck-Institut für Eisenforschung GmbH, Germany)
21:20-21:30	Break
	Session 4 (Chair: Brian Somerday, University of Illinois at Urbana Champaign)
21:30-22:10	Invited talk 7: Research progress on hydrogen embrittlement in high-entropy alloys **Hong Luo** (University of Science and Technology Beijing, China)
22:10-22:50	Invited talk 8: Mitigation of hydrogen embrittlement by impurities **Masanobu Kubota** (Kyushu University, Japan)
22:50-23:00	Closing Remarks **Brian Somerday** (University of Illinois at Urbana-Champaign, USA)

TREC-GT

九州大学 エネルギーウィーク 2022
Energy Week 2022

九州大学エネルギーウイーク 2022（EW2022）

筑紫シンポジウム

「熱―電気直接変換発電に向けた九州大学の挑戦」

日時：2022 年 1 月 28 日(金) 9:20～12:20

場所：オンライン開催（EW2022 公式サイトから参加登録、無料）

主催：九州大学グリーンテクノロジー研究教育センター(TREC-GT)

後援：一般社団法人　日本熱電学会
一般社団法人　日本エネルギー学会 西部支部
公益社団法人　日本セラミックス協会 九州支部

プログラム

1. 9:20～9:30「開会の辞と趣旨説明」
   総合理工学研究院 物質科学部門
   グリーンテクノロジー研究教育センター長　大瀧 倫卓 教授
2. 9:30～10:00「銅ー硫黄系熱電材料の探索：結晶構造と物性の関係」
   総合理工学研究院 物質科学部門　末國 晃一郎 准教授
3. 10:00～10:30「Phase boundary mapping による新規熱電ジントル化合物の探索」
   工学研究院 応用化学部門　大野 真之 助教
4. 10:30～11:00「有機無機ペロブスカイト熱電材料開発への計算科学的アプローチ」
   総合理工学研究院 物質科学部門　飯久保 智 教授
5. 11:00～11:30「スピントロニクスを用いた新奇熱電材料」
   システム情報科学研究院 情報エレクトロニクス部門　湯浅 裕美 教授
6. 11:30～12:00「カーボンナノチューブからなる熱電材料開発の現状と問題点」
   工学研究院 応用化学部門　藤ヶ谷 剛彦 教授
7. 12:00～12:20　総合討論

（講演時間には 5 分程度の質疑応答を含みます）

問い合わせ先：〒816-8580　福岡県春日市春日公園 6-1
九州大学大学院総合理工学研究院 物質科学部門　大瀧倫卓
電話&FAX：092-583-7947　　電子メール：ohtaki@kyudai.jp

EW2022 公式サイト <https://q-pit-ew.kyushu-u.ac.jp/ja>

International Symposium of Hydrogen Polymers Team, HYDROGENIUS

< Date and hour > 9:30-16:50, Friday, 28th January 2022 (JST)
< Venue > Inamori Hall, Kyushu University / ZOOM meeting
< Language > English

Program and Speaker

Time（JST）	Program and Speaker
09:30-09:40	Opening Remarks **Prof Shin NISHIMURA,** Kyushu University (Japan)
09:40-10:10	Toyota Project PORTAL －Zero emission class 8 truck powertrain－ **Dr Takehito YOKOO,** Toyota Motor North America (USA)
10:10-11:00	High-pressure hydrogen effect on the ZnO/S interface in EPDM and NBR rubbers **Dr Kevin SIMMONS,** Pacific Northwest National Laboratory (USA)
11:00-11:10	10-minute-break
11:10-12:00	Coupled diffusion-deformation-damage model to predict the damage initiation in polymer during rapid decompression failure. **Dr Shank KULKARNI,** Pacific Northwest National Laboratory (USA)
12:00-12:50	Durability assessment of rubber seal device for high-pressure hydrogen gas. **Prof Hirotada FUJIWARA,** Kyushu University (Japan)
12:50-13:30	Lunch Break
13:30-14:30	Lab tour for participants at Inamori Hall
15:00-15:50	AI analysis of the high-pressure properties of rubber materials **Dr Hiroaki ONO,** Kyushu University (Japan)
15:50-16:40	Sub critical crack growth of PA11 hose liner for high-pressure hydrogen gas supply **Prof Takashi KURIYAMA,** Yamagata University (Japan)
16:40-16:50	Closing Remarks **Prof Shin NISHIMURA,** Kyushu University (Japan)

Local Time for the symposium

	Japan (JST)	China (CST)	US West (PST)	US East (EST)	Europe (CET)	UK (GMT)
Dr Yokoo	09:40	08:40	16:40*	19:40*	01:10	00:40
Dr Simmons	10:10	09:10	17:10*	20:10*	02:10	01:10
Dr Kulkarni	11:10	10:10	18:10*	21:10*	03:10	02:10
Prof Fujiwara	12:00	11:00	19:00*	22:00*	04:00	03:00
Dr Ono	15:00	14:00	22:00*	01:00	07:00	06:00
Prof Kuriyama	15:50	14:50	22:50*	01:50	07:50	06:50

* Thursday, 27 January

-2022 HYDROGENIUS & I^{2}CNER TRIBOLOGY SYMPOSIUM -

HYDROGENIUS AND I^{2}CNER JOINT RESEARCH SYMPOSIUM (HYDROGENIUS TRIBOLOGY DIVISION AND I^{2}CNER ADVANCED ENERGY MATERIALS THRUST)

<Date> 13:00-18:00, 28th January 2022

< Venue > Room 914, West 4 building, Kyushu University and Online (ZOOM meeting)

< Language > English

< Program and Speaker >

Time	Program and Speaker
13:00-13:10	Opening Remarks
13:10-13:50	Invited Lecture 1: Toward a Hydrogen Society ～KOBELCO Group's Approach～ **Mr. Naofumi Kanei,** KOBELCO (Japan)
13:50-14:30	Invited Lecture 2: The developmental status quo of the high-pressure hydrogen seals **Mr. Hiroyuki Komori,** NOK (Japan)
14:30-15:10	Invited Lecture 3: Realization of low friction in H2 gas by controlling doped metal in DLC coatings Mr. Keita Yukinori, Toyota Motor East Japan Inc. (Japan)
15:10-15:40	Invited Lecture 4: Friction and wear of PTFE-PPS composites in hydrogen **Prof Yoshinori Sawae,** Kyushu University (Japan)
15:40-16:10	Invited Lecture 5: Fundamental study on cone and thread fittings in high pressure hydrogen systems **Prof Joichi Sugimura,** Kyushu University (Japan)
16:10-16:30	Cofffee Break
16:30-17:10	Keynote Lecture 1: TBA **Prof František Lofaj,** Slovak Academy of Sciences (Slovak Republic)
17:10-17:50	Keynote Lecture 2: TBA **Prof Nazanin Emami,** Luleå University of Technology (Sweden)
17:50-18:00	Closing Remarks

INTERNATIONAL INSTITUTE FOR CARBON-NEUTRAL ENERGY RESEARCH

I²CNER THRUST WORKSHOP: TOWARD CARBON NEUTRALITY

ADVANCED ENERGY MATERIALS THRUST (AEM),
ADVANCED ENERGY CONVERSION SYSTEMS THRUST (AEC),
AND MULTISCALE SCIENCE AND ENGINEERING FOR ENERGY AND THE ENVIRONMENT THRUST (MS3E)

DATE: JANUARY 28TH, 2022, FRIDAY
TIME: 11:00 PM – 02:00 AM (JST)
VENUE: VIRTUAL WORKSHOP VIA ZOOM

Time	Speaker	Affiliation	Title
11:00-11:05	Prof. Hiroshige Matsumoto	AECS, I²CNER	Opening Introduction
Session 1: Advanced Energy Materials Thrust (AEM)			
11:05-11:25	Prof. Arnaud Macadre	AEM, I²CNER / Yamaguchi University	Towards hydrogen-resistant low-Ni austenitic steels
11:25-11:45	Prof. Yukina Takahashi	AEM, I²CNER	Highly efficient photoenergy conversion system in nanoscale with plasmonic nanoparticles
11:45-12:05 (00:00 AM)	Prof. Liu Ming-Han	AEM, I²CNER	Development of Atomic-scale Gold Catalysts for Heterogeneous Catalysis
Session 2: Advanced Energy Conversion Systems Thrust (AEC)			
00:00-00:20	Prof. Kulbir Ghuman	Institut national de la recherche scientifique	Disordered engineering of metal oxides for fuel cell applications
00:20-00:40	Prof. Aleksandar Staykov	AECS, I²CNER	Effect of cation polarizability on catalytic activity, ionic transport, and proton transport in fluorite, perovskite, and Ruddlesden-Popper lattices
00:40-01:00	Prof. Toshinori Matsushima	AECS, I²CNER	Toward high efficiency and durability from hybrid perovskite solar cells
Session 3: Multiscale Science and Engineering for Energy and the Environment Thrust (MS3E)			
01:00-01:10	Prof. Shigenori Fujikawa (5 min)	MS3E, I²CNER	Recent achievements of CO_2 capture research
	Prof. Saha Bidyut Baran (5 min)	MS3E, I²CNER	Recent achievements of energy efficiency research
01:10-1:35	Prof. Takeshi Tsuji (5 min)	MS3E, I²CNER	Recent achievements of CO_2 storage research

	Prof. Kenneth Christensen (15 min)	Illinois Tech	Pore-Scale Dynamics of Liquid CO_2-Water Displacement in 2D Porous Micromodels
01:35-2:00	Prof. Andrew Chapman (5 min)	MS3E, I^2CNER	Recent achievements of energy analysis research
	Prof. Caleb Brooks (15 min)	UIUC	Energy Transitions, Culture and Technology

< Kyushu University COI>
<Center of Coevolutionary Research for Sustainable Communities (C^2RSC) Symposium>

<Date> 13:00-17:30, January 28, 2022
<Venue> ACROS Fukuoka, Online (ZOOM Webinar)
<Language> Japanese
<Theme> "Creation of a safe, active, and vibrant community
～Revitalizing the local economy through locally generated and consumed energy and creating sustainable mobility and ICT monitoring services～"

Time	Program and Speaker
13:00-13:20	**Opening Remarks** Prof. Tatsuro Ishibashi, President of Kyushu University Ms. Mutsuko Inoue, Ministry of Education, Culture, Sports, Science and Technology (MEXT) Ms. Yoshiko Shirokizawa, Executive Director, Japan Science and Technology Agency (JST) Mr. Masaaki Mizuno, Visionary Leader of Vision 3 , COI Program
13:20-13:35	**Overview of Kyushu University COI** Dr. Yuichi Nakamura, Project Leader, Kyushu University (C^2RSC), Executive Professional, NEC Corp.
13:35-14:25	**The initiatives and research themes for social implementation in each field** ● **Sustainable Mobility**
14:25-14:35	**Break**
14:35-15:25	**The initiatives and research themes for social implementation in each field** ● **ICT Monitoring**
15:25-15:40	**Collaboration between Fukuoka City & Kyushu University** TBD (Fukuoka City)
15:40-16:30	**The initiatives and research themes for social implementation in each field** ● **Locally generated and consumed energy**
16:30-16:45	**Break**
16:45-17:05	**The initiatives and research themes for social implementation in each field** ● **Utilization of Math for Industry**
17:05-17:25	**Future Deployment** Moderator: Dr. Yuichi Nakamura (Project Leader, Kyushu University (C^2RSC))
17:25-17:30	**Closing Remarks** Prof. Yoshio Hisaeda, Director, Kyushu University (C^2RSC), Executive Vice President, Kyushu University

※The program is subject to change.