



Energy Intelligence
Beyond Borders:
Cultivating Creativity
in Future Generations

KYUSHU UNIVERSITY

Energy Week 2019

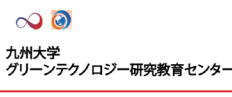
Date [Mon] 28 Jan. – [Fri] 1 Feb., 2019

Venue KYUSHU UNIVERSITY Ito Campus, Chikushi Campus / Denki Building KYOSOKAN

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

6-1 Kasuga-koen, Kasuga, Fukuoka
816-8580, JAPAN

Denki Building, 2-1-82 Watanabe-dori, Chuo, Fukuoka
810-0004, JAPAN



IMCE Institute for
Materials Chemistry
and Engineering,
Kyushu University

* Departments participating in Energy Week 2019,
related to the energy research in Kyushu University

Contacts

Date	Program	Departments	Contact
1/28 (Mon)・1/29 (Tue)	Q-PIT related programs	Administrative Office for Kyushu University Platform of Inter/ Transdisciplinary Energy Research	+81-92-802-6672
1/29 (Tue)~30 (Wed)	HYDROGENIUS related programs HYDROGENIUS・I ² CNER・ HydroMate Joint Research Symposium	Research Center for Hydrogen Industrial Use and Storage, Kyushu University	090-6482-2075 (available for 1/29-1/30 only)
1/31 (Thu)~2/1 (Fri)	I ² CNER related programs	International institute for Carbon-Neutral Energy Research, Kyushu University	+81-92-802-6935
2/1 (Fri)	COI related programs	The Center of Coevolutionary Research for Sustainable Communities, Kyushu University	+81-92-802-6677
	Chikushi Symposium	Research Center for Synchrotron Light Applications, Kyushu University Kyushu University Research Promotion Division Project Support Section	+81-92-583-7643 +81-92-802-2322

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Message



President
Kyushu University

Chiharu Kubo

First, I would like to express my sincere appreciation for your participation in Kyushu University Energy Week 2019.

On the occasion of the 100th anniversary of its foundation, Kyushu University established the slogan, “Lead through the Next 100 Years, Leap into the top 100 universities in the World,” aspiring to become one of the world’s best universities. In line with the basic principle of “With continual and autonomous reforms, while guaranteeing educational quality at an international level, we aim to be a top-level education and research hub marked by vitality and a willingness to address future issues,” in 2015 we formulated the Kyushu University Action Plan 2015-2020, upon which various initiatives have been launched, and established the Platform of Inter/Transdisciplinary Energy Research.

Fukuoka, where Kyushu University is located, was one of the first places to experience the industrial revolution in Asia, and it once played a central role in Japan’s energy industry as a coal-mining city. Also, as a gateway to Asia, Fukuoka has actively adopted the cultures of other Asian countries and has influenced many other countries and regions as a point of transmission of Japanese culture. Against this background, various research projects on energy have been actively conducted at Kyushu University, with creative and basic academic studies underway in a wide range of fields.

In this day and age, people of all generations have become more interested in energy issues, especially because of past experiences such as the oil crisis, the Chernobyl nuclear power plant accident, and the Great East Japan Earthquake, to name a few. Our country in particular relies on imports for most fossil fuels, a major energy source, so the realization of sustainable energy that is not dependent on fossil fuels has been a long-standing goal for us. A variety of difficulties come with fossil fuel-free energy sources, in terms of technology, economy, safety, and sustainable and stable utilization. In order to overcome these problems, researchers and technicians from all relevant fields must work hand-in-hand to seek solutions from many different perspectives. Also, we must continue to address the issues of environmental destruction and global warming, which we face in the process of new discoveries, research, development, and applications, and work toward the realization of a future energy efficient society.

In this context, we see it as vital to reconsider our mission and to realize the formation of a research and education core that takes advantage of our university’s unique strengths. We established the Platform of Inter/Transdisciplinary Energy Research in October 2016 as an all-Kyushu Univ. platform to promote the energy field. Currently, all members, including myself as Director General, the Deputy Director General, four professors, ten academic members, Secretariat staff, and cooperating academic staff are working hard toward the promotion of inter/transdisciplinary energy research. The research achievements of note resulting from these efforts are expected to be shared via educational activities.

Under the theme of “Energy Intelligence Beyond Borders: Cultivating Creativity in Future Generations,” we are hosting Kyushu University Energy Week 2019 this year. It is an opportunity to publicize our university’s initiatives in widely varied areas and communities, both at home and abroad, and serves as a forum to deepen exchanges among participating researchers, where they can discuss their research results. For our third “Energy Week” event focusing on energy education, we have invited prominent researchers engaged in energy research and education at world renowned universities to deliver lectures. Also, in cooperation with the institutions of Kyushu University, which include the International Institute for Carbon-Neutral Energy Research, HYDROGENIUS, COI Center of Coevolutionary Research for Sustainable Communities, and Chikushi Campus, we are hosting symposiums to introduce the activities of various departments and presentation sessions of young researchers. In addition, we are holding research presentation sessions of students and young researchers from abroad, aiming at international joint research as a part of our activities as a global hub in the energy field. Your active participation in these events is gratefully welcomed.

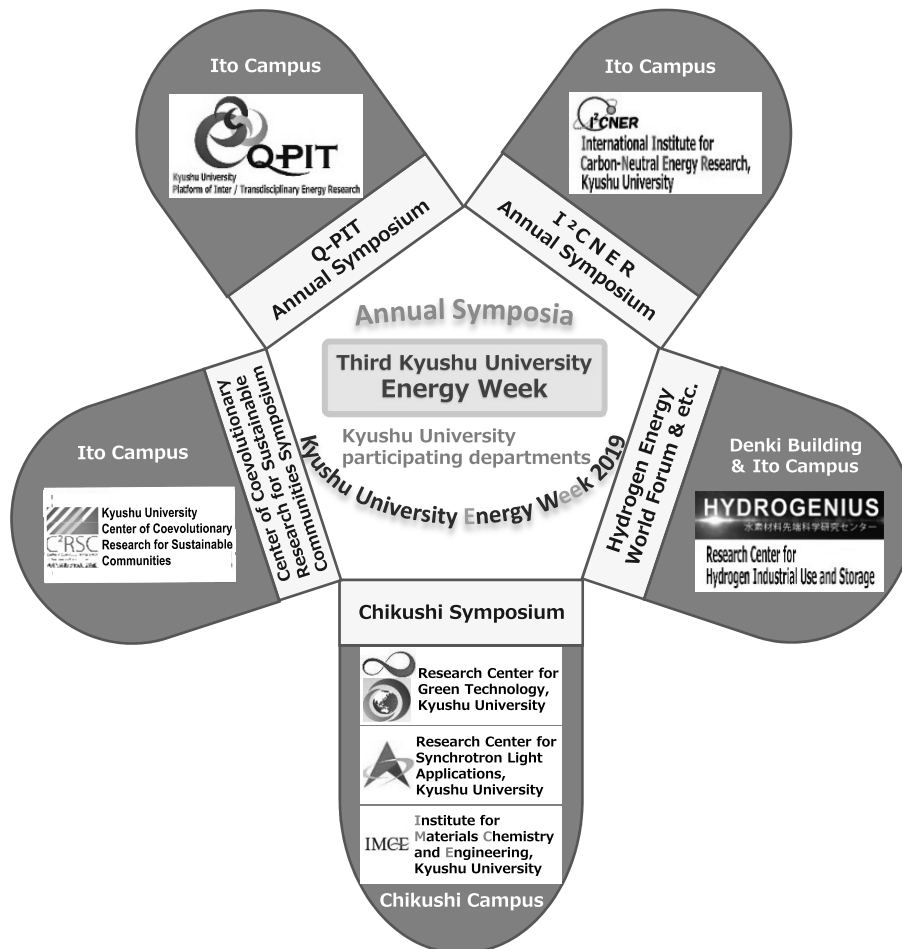
About Kyushu University Energy Week

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 and the President's Award ceremony for the best poster presentations.

The 5-day 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.

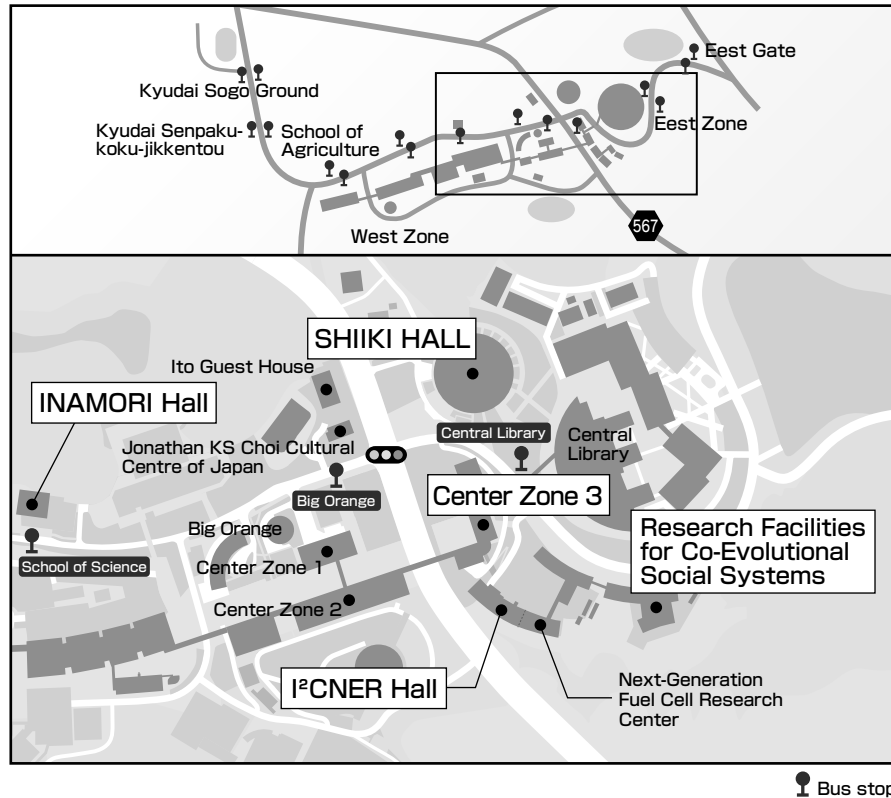


Venue

KYUSHU UNIVERSITY Ito Campus

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

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" → Inamori or I²CNER or (Research Facilities for Co-Evolutional Social Systems)

Get off at the bus stop "Kyudai Rigakubumae (School of Science)" → Inamori

※ 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

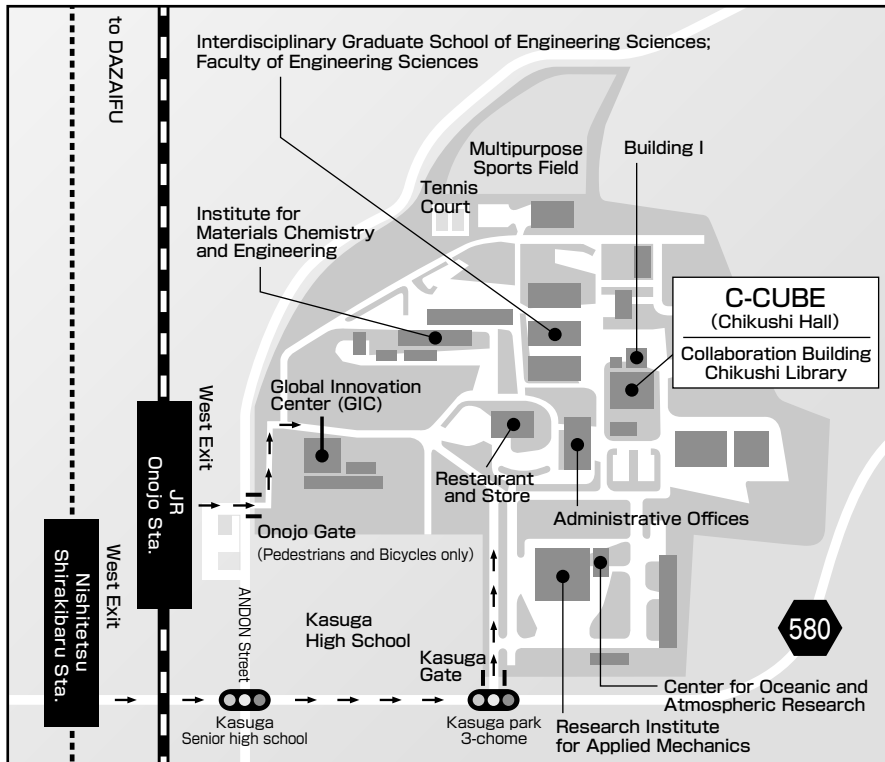
※ 3 Get off at the bus stop "Big Orange Mae" → Inamori or I²CNER or Research Facilities for Co-Evolutional Social Systems

Get off at the bus stop "Kyudai Rigakubumae(School of Science)" → Inamori

KYUSHU UNIVERSITY Chikushi Campus

● C-CUBE(Chikushi Hall)

6-1 Kasuga-koen, Kasuga, Fukuoka, 816-8580, JAPAN



Denki Building KYOSOKAN

Denki Building, 2-1-82 Watanabe-dori, Chuo, Fukuoka, 810-0004, Japan

Program & Schedule

Date	Dept.	9:00	9:30	10:00	10:30	11:00	11:30	12:00	12:30	13:00	13:30	14:00	
Jan.28 (mon)	Q-PIT				Q-PIT Plenary Session Opening Ceremony/Presentation of Q-PIT/Invited Lecture [JPN/ENG] (simultaneous translation)						Q-PIT Plenary Session Poster Presentation (@I ² CNER foyer)		
	Q-PIT (School of Interdisciplinary Science and Innovation)									Fostering global talent School of Interdisciplinary Science and Innovation [JPN/ENG]			
	Q-PIT											Hydrogen Energy Facilities Tour [JPN/ENG]	
Jan.29 (tue)	Q-PIT	Q-PIT Workshops: Sheffield Kyushu Workshop on Electrochemical Energy Conversion [ENG]											
	HYDROGENIUS METI												
Jan.30 (wed)	HYDROGENIUS METI			Hydrogen Energy and Fuel Cell Forum in Kyushu & Int'l Hydrogen Energy Development Forum 2019 Day2 [JPN/ENG]									
	HYDROGENIUS I ² CNER									HYDROGENIUS, Fracture/			
										HYDROGENIUS & Hydrogen			
	HYDROGENIUS										HYDROGENIUS & Properties/		
	IMCE									HYDROGENIUS			
										IMCE Special Lecture			
Jan.31 (thu)	I ² CNER	I ² CNER											
Feb.1 (Fri)	I ² CNER	I ² CNER International Workshop①Molecular Photoconversion Devices Division											
											I ² CNER International		
											I ² CNER International		
				I ² CNER International Workshop									
											I ² CNER International		
	C ² RSC(COI)										Kyushu Univ. COI, Communities		
GTC RCSLA													

- ※Q-PIT:Kyushu University Platform of Inter/Transdisciplinary Energy Research
- ※I²CNER: International Institute for Carbon-Neutral Energy Research
- ※C²RSC: Center of Coevolutionary Research for Sustainable Communities
- ※HYDROGENIUS: Research Center for Hydrogen Industrial Use and Storage
- ※GTC: Research Center for Green Technology
- ※RCSLA: Research Center for Synchrotron Light Applications
- ※IMCE: Institute for Materials Chemistry and Engineering

* Above Program is subject to change without prior notice.

14:30 15:00 15:30 16:00 16:30 17:00 17:30 18:00 18:30 19:00										Venue	
Q-PIT Plenary Session Invited Lecture/Panel Discussion / Best Poster Awards Ceremony / Closing Remarks [JPN/ENG](simultaneous translation)										I ² CNER Hall /foyer, I ² CNER Bldg. 1, Ito Campus	
										I ² CNER Hall, I ² CNER Bldg. 1, Ito Campus	
										Ito Campus	
Q-PIT Workshops: Low-Carbon Energy Transitions in Asia: Interdisciplinary Perspectives [ENG]										Inamori Hall, Ito Campus	
Hydrogen Energy and Fuel Cell Forum in Kyushu & Int'l Hydrogen Energy Development Forum 2019 Day1 [JPN]					Hydrogen Energy and Fuel Cell Forum in Kyushu & Int'l Hydrogen Energy Development Forum 2019 Day1 Reception						Mirai Hall, Denki Building Kyosokan
										Shiiki Hall, Ito Campus	
I ² CNER & HydroMate Joint Research Symposium① Fatigue & Hydrogen Materials Compatibility Division [ENG]											Lecture Theater 302, 3F, Shiiki Hall, Ito Campus
I ² CNER Joint Research Symposium②Tribology/ Materials Compatibility Division [ENG]											Lecture Theater 303, 3F, Shiiki Hall, Ito Campus
I ² CNER Joint Research Symposium③ Thermophysical Thermal Science and Engineering Division [ENG]											Conference Room, 2F I ² CNER Bldg.1, Ito Campus
Symposium Polymers [ENG]											Lecture Theater 304, 3F, Shiiki Hall, Ito Campus
Next Generation's Li-ion Battery Materials [JPN]											Room 111, IMCE Bldg., Chikushi Campus
Annual Symposium [ENG]										I ² CNER Hall, I ² CNER Bldg. 1, Ito Campus	
										I ² CNER Reception	
& Electrochemical Energy Conversion Division [ENG]										I ² CNER Hall B, I ² CNER Bldg. 1, Ito Campus	
Workshop②Catalytic Materials Transformations Division & CO ₂ Capture and Utilization Division [ENG]											I ² CNER Hall C, I ² CNER Bldg. 1, Ito Campus
Workshop③CO ₂ Storage Division [ENG]											I ² CNER Hall A, I ² CNER Bldg. 1, Ito Campus
④Energy Analysis Division [ENG]											Conference Room 203, Co-Evolutional Social Systems, Ito Campus
Workshop⑤Applied Math for Energy [ENG]											Seminar Room 3105-6, Center Zone Bldg.3, Ito Campus
Center of Coevolutionary Research for Sustainable (C ² RSC) Symposium [JPN/ENG]					Networking event						2F Hall, Co-Evolutional Social Systems, Ito Campus
Chikushi Symposium [JPN/ENG](simultaneous translation)											Chikushi Hall, Chikushi Campus

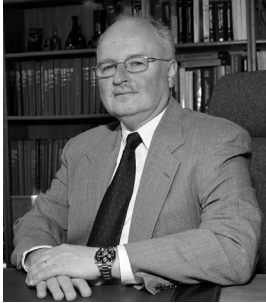
**Kyushu University Platform of Inter/Transdisciplinary
Energy Research (Q-PIT)**
<Plenary Session>

<Date> 10:00-17:50, 28th January 2019
 <Venue> I²CNER Hall, I²CNER Bldg. 1, Ito Campus
 <Language> English and Japanese (simultaneous translation)
 <Theme> "Graduate School Education Programs at World-Leading Universities "

< Program and Speaker>

Time	Program and Speaker		
10:00-10:10	Opening Ceremony Welcome Address, Chiharu Kubo, President of Kyushu University		
10:10-10:30	Introduction to Q-PIT Activities Prof. Yoshihiro Yamazaki, Kyushu University Platform of Inter/Transdisciplinary Energy Research		
10:30-11:00	Graduate Education at the Massachusetts Institute of Technology (Invited Lecture) Prof. Harry L. Tuller, Department of Materials Science & Engineering, Massachusetts Institute of Technology		
11:00-11:30	Graduate School Educational Programs at Imperial College(Invited Lecture) Prof. John A Kilner, Department of Materials, Imperial College London		
11:30-12:40	Break		
12:40-14:10	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; vertical-align: top;"> Fostering Global Talent: The School of Interdisciplinary Science and Innovation Venue: I²CNER Hall, I²CNER Bldg.1 </td> <td style="width: 50%; vertical-align: top;"> Poster Session(Registration starts at 12:10) Venue: Foyer, I²CNER Bldg.1 Theme: <i>Transdisciplinary Energy Research at Kyushu University</i> Doctoral/graduate students, young researchers, international Doctoral students/researchers *The award ceremony will be held on the same day in the I²CNER hall, at 17:30. </td> </tr> </table>	Fostering Global Talent: The School of Interdisciplinary Science and Innovation Venue: I²CNER Hall, I²CNER Bldg.1	Poster Session(Registration starts at 12:10) Venue: Foyer, I²CNER Bldg.1 Theme: <i>Transdisciplinary Energy Research at Kyushu University</i> Doctoral/graduate students, young researchers, international Doctoral students/researchers *The award ceremony will be held on the same day in the I ² CNER hall, at 17:30.
Fostering Global Talent: The School of Interdisciplinary Science and Innovation Venue: I²CNER Hall, I²CNER Bldg.1	Poster Session(Registration starts at 12:10) Venue: Foyer, I²CNER Bldg.1 Theme: <i>Transdisciplinary Energy Research at Kyushu University</i> Doctoral/graduate students, young researchers, international Doctoral students/researchers *The award ceremony will be held on the same day in the I ² CNER hall, at 17:30.		
14:10-14:30	Break		
14:30-15:00	University of California, San Diego (UCSD) Graduate Programs and Studies (Invited Lecture) Prof. Nguyen Minh, Center for Energy Research, University of California, San Diego		
15:00-15:30	Graduate Education and Research at Stanford University: <i>Transformation of a Regional University into a Global Powerhouse (Invited Lecture)</i> Adjunct Prof. Turgut M Gür, Department of Materials Science and Engineering, Stanford University		
15:30-15:50	Break		
15:50-17:10	Panel Discussion <u>Theme:</u> Plans for a Hydrogen Energy Graduate School at Kyushu University Moderator: Prof. Kazunari Sasaki, Senior Vice President, Kyushu University Panel: Invited speakers from world-leading universities		
17:10-17:30	Break		
17:30-17:45	Best Poster Award Ceremony		
17:45-17:50	Closing Remarks Prof. Kentaro Yoshida, Kyushu University Platform of Inter/Transdisciplinary Energy Research		

Invited Lecture 1



Graduate Education at the Massachusetts Institute of Technology

Professor,
Department of Materials Science and Engineering
Massachusetts Institute of Technology

Harry L. Tuller

Abstract

MIT's mission is to advance knowledge and educate students in science, technology, and other areas of scholarship and to bring this knowledge to bear on the world's great challenges. Teaching and research is directed towards gaining an understanding of the fundamentals of science, technology, and other areas of scholarship, with a deep commitment to developing problem-solving skills, historical and literary insight, and an appreciation for the scientific method. Hands-on research opportunities provide students with a foundation for professional competence and opportunities to learn by doing.

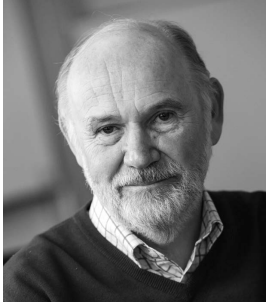
MIT graduate programs are designed to provide environments for advanced study by faculty and students working together to extend the boundaries of knowledge. Traditionally a leader in engineering and science graduate education, MIT has also attained national prominence for its doctoral programs in mathematics and the physical and life sciences. Top-ranked graduate programs in economics; political science; linguistics; science, technology, and society; architecture; media studies; urban studies; and management broaden the spectrum of graduate education. Graduate education at MIT places special emphasis on the relevance of science and technology to the complex problems of society. Such problems frequently require an interdisciplinary approach involving expertise in several different departments¹.

In this presentation, I first focus on describing the graduate program in my Department of Materials Science and Engineering and allied departments including admissions, curriculum, course requirements, counseling, written/oral exams, thesis research, and interdisciplinary activities, all designed to insure that a student acquires core knowledge in the field and then applies it in a manner demonstrating his/her ability to address novel and/or complex problems in depth and report these findings in a cogent and thoughtful manner. I then redirect my focus to a key strength of MIT, that being the ability and enthusiasm to address major global challenges in a directed and collaborative manner. Given the Energy focus of this conference, I will describe the operations and activities of the MIT Energy Initiative (MITEI) whose stated goals are to help develop technologies and solutions to deliver clean, affordable, and plentiful sources of energy to efficiently meet global energy needs while minimizing environmental impacts, dramatically reducing greenhouse gas emissions, and mitigating climate change². MITEI has succeeded in bringing together faculty, scientists and engineers from across the institute, creating an interdisciplinary cohort of individuals capable of addressing global energy challenges taking simultaneously into account scientific, technical, social, economic and political factors. I will offer examples of how our students' graduate education benefits from such broad collaborations.

¹ Text borrowed from the MIT website: <http://catalog.mit.edu/mit/graduate-education/>

² <http://energy.mit.edu/about/>

Invited Lecture 2



Graduate School Educational Programs at Imperial College

Professor,
Department of Materials,
Imperial College London

John A Kilner

Abstract

Imperial College London is a world top ten university with an international reputation for excellence in teaching and research. Consistently rated amongst the world's best universities, Imperial is committed to developing the next generation of researchers, scientists and academics through collaboration across disciplines. Located in the heart of London, Imperial is a multidisciplinary space for education, research, translation and commercialisation, harnessing science and innovation to tackle global challenges.

The graduate School at Imperial has been designed to meet the most pressing global challenges through the foundation of 6 institutes, the Data Science Institute, the Energy Futures Lab., The Institute of Global Health Innovation, The Grantham Institute for Climate Change and the Environment, The Institute for Security Science and Technology, and the Institute for Molecular Science and Engineering. The graduate School offers routes to both masters and doctorate qualifications. Masters courses can result in a broader 1year Master of Science (MSc) with a significant taught content and a small research project or the more focussed Master of Research involving a majority of time being spent in research. Doctoral courses can result in either a 3year PhD involving research into a specific topic or and Engineering Doctorate with between 50-75% of time spent at an industrial placement. Core to all these programmes is an extensive professional skills development programme for both masters and doctoral students aimed at giving postgraduate students an essential grounding in transferable skills pertinent to their future career development.

Doctoral training for qualifying students is funded through support from the UK Engineering and Physical Sciences Research Council (EPSRC). EPSRC support is granted through 3 different routes, Centres for Doctoral Training (CDTs), which are cohort-based in areas of national need, Doctoral training partnerships, block grants to universities for flexible PhD support based on research income, and CASE awards, highly user focused training with a company which chooses the project and university.

Details of the Graduate school can be found at <https://www.imperial.ac.uk/study/pg/graduate-school/>

Invited Lecture 3



University of California, San Diego (UCSD) Graduate Programs and Studies

Professor,
Center for Energy Research
University of California, San Diego

Nguyen Minh

Abstract

University of California, San Diego (UCSD) offers a wide variety of academic and professional graduate degree programs and graduate studies and welcomes talented students from across the U.S. and around the world. UCSD seeks to train graduate students who will become tomorrow's leaders in their fields and who will be equipped to solve problems and thereby transform lives and society. In addition to graduate students pursuing degrees granted by the University, UCSD provides opportunities of research studies for non-UCSD visiting graduate students. Participation of visiting graduate students in R&D activities at UCSD, inherently beneficial to the visiting student, his/her home institution and UCSD, serves to infuse diverse research perspectives for the student that can help to accelerate the progress of research. This presentation gives an overview of UCSD graduate studies with a focus on visiting graduate student programs and a brief discussion of energy-related research activities at UCSD.

Invited Lecture 4



Graduate Education and Research at Stanford University: *Transformation of a Regional University into a Global Powerhouse*

Adjunct Professor,
Department of Materials Science and Engineering
Stanford University

Turgut M. Gür

Abstract

It is not accidental that Stanford evolved to be one of the top tier universities in the world. Started its course offerings as a regional but visionary university in 1891, Stanford transformed into a national and global powerhouse in excellence in education and a front-runner in ground breaking research.

I will describe how this transformation was accomplished, how Stanford became so impactful in the emergence and supremacy of Silicon Valley, how it still maintains its influence in further transforming Silicon Valley from semiconductors into new technological ventures ranging from biotechnology to nanotechnology to artificial intelligence to renewable energy to autonomous driving.

I will discuss how Stanford has built an academic environment that values and encourages innovation and entrepreneurship in its graduate and undergraduate students, emphasizes collaborative culture and the importance of interdisciplinarity in education and research, and accepts failure as part of the learning experience. As the quality of both students and faculty constitute the backbone of an academic institution, I will explain their recruitment process.

I will also describe how education and research are organized, structured, and coordinated at Stanford among the disciplinary departments and interdisciplinary and multidisciplinary research laboratories, centers and institutes to address some of world's most complex and impending problems. By lowering the disciplinary boundaries among departments and schools, Stanford allows academic freedom to its graduate students to pursue their intellectual interests and passions by crossing over to other departments or even schools to carry out their graduate research projects. In addition, Stanford allows joint faculty appointments among departments as a mechanism to facilitate collaboration and cross-breeding or seeding, and also provides flexibility to departments to recruit even outside the discipline.

Finally, I will illustrate the potential impact of a research university on economy by providing examples of Stanford's contributions to the local, national and international economies, technological breakthroughs, and the general well being of the global society at large.

**<Kyushu University Platform of Inter/Transdisciplinary
Energy Research (Q – P I T) >
<Poster Presentation>**

<Date> 12:40-14:10, Monday, 28th January 2019

<Venue> Foyer, I²CNER Bldg.1, Ito Campus, Kyushu University

*The award ceremony will be held in the I²CNER hall.

<Language> English and Japanese

<Session name> Poster presentation

- Poster Presentation by young researchers, doctoral students, international researchers and graduate students
(Reception and posters starts at 12:10)

【学内応募者】

ポスター 番号	所属	氏名	研究タイトル
①-1	工学府	星野 健太	次世代燃料電池電解質におけるプロトン伝導の起源解明
①-2	工学府	武藤 稔佳	再生可能エネルギー利用を想定した高性能水電解電極触媒の開発
①-3	工学府	Hwang Byungchan	Development of chemical durable polymer blend consisting of silicone polymer
①-4	工学府	澤山 和貴	地熱貯留層モニタリングを目指した亀裂岩石物性の解明
①-5	工学府	JAYAWICKRAMA SAMINDI MADHUBHA	Advantages of polymer wrpping on to the carbon black toward improved Pt utilization efficiency in polymer electrolyte membrane fuel cell(PEMFC)
①-6	工学府	黄 亭維	再エネを目的とした PEFC の高効率化に向けたメソポーラスカーボンファイバーの開発
①-7	工学研究院	CHEN TING	Emergence of Rapid Oxygen Surface Exchange Kinetics During In Situ Crystallization of Mixed Conducting Thin Film Oxides
①-8	工学府	安武 昌浩	金属酸化物担体を用いた固体高分子形水電解セルの研究
①-9	工学府	宇田 圭佑	水素の高効率利用に向けた低白金燃料電池の設計
①-10	工学府	吉永 健	再エネの有効利用を目的とした水電解・燃料電池ハイブリッド触媒に関する基礎研究
①-11	工学部	高田 正太郎	バイオガスで作動する燃料電池の燃料極に関する研究
①-12	工学府	松本 豪	SOFC の小型・高効率化に資する排熱その場回収法に関する研究
①-13	工学府	真鍋 大道	PEFC 電極触媒層の 3 次元構造観察手法に関する研究
①-14	工学府	二村 聖太郎	将来の超高効率エネルギーシステムの為に～燃料電池の設計指針～
①-15	工学府	中村 翼	再エネ有効利用を目的とした PEFC の高耐久化 –カソードカーボン酸化劣化の定量的な検討–
①-16	工学府	武井 翔太	再エネ有効利用を目的とした低白金 PEFC の高効率化 -濃度過電圧低減の検討-
①-17	システム情報科学研究院	三浦 峻	風力発電へ向けた大容量の全超伝導同期発電機の基礎的検討
①-18	稲盛フロンティア研究センター	兵頭 潤次	格子欠陥を利用した界面バンドエンジニアリングによる光触媒の高性能化

①-19	持続的共進化地域創成拠点	Pham Hung Cuong	Development of Fe-Cr-Al Alloy as a Porous Alloy Substrate for SOFCs
①-20	統合新領域学府	峯崎 航希	膜分離によるバイオガスからのカーボンフリー水素製造
①-21	統合新領域学府	Yan LI	pn junction formation by Si paste coated on metal substrates
①-22	総合理工学府	坂本 遼	高電圧水系 Mg 電池の構築を目的とした高濃度電解液の創製
①-23	総合理工学府	西尾 陽	高エネルギー密度化を狙った单相型全固体電池の構築
①-24	総合理工学府	小島 信一郎	核融合発電実現に向けた EC 高調波加熱時の中性粒子の影響と静電波を用いた高密度化の実験提案
①-25	総合理工学府	Xie Baowei	Cathode Properties of Na ₃ MnPO ₄ CO ₃ Prepared by Mechanical Milling Method for Na-ion Battery
①-26	応用力学研究所	LIU YINGYI	Performance evaluation of multiple-rotor floating wind turbine systems of semi-submersible type under the effect of partial wake from upstream rotors
①-27	先導物質化学研究所	中本 康介	共有結合性有機構造体 COF を用いた高エネルギー密度水系 Na イオン電池
①-28	カーボンニュートラル・エネルギー国際研究所	Vincent Thoréton	Improving the surface exchange kinetics of air electrode materials for Solid Oxide Cells (SOCs) through controlling the gas feed composition: implementation of Pulsed Isotopic Exchange (PIE).
①-29	カーボンニュートラル・エネルギー国際研究所	北野 翔	酸素発生反応のための金属クラスター複合層状複水酸化物ナノシート電極触媒の開発
①-30	工学府 (カーボンニュートラル・エネルギー国際研究所)	吉田 修一	ケミカルコーティングによる水素ぜい化抑制効果に及ぼす材料強度の影響に関する研究
①-31	工学府 (カーボンニュートラル・エネルギー国際研究所)	山田 和輝	一酸化炭素ケミカルコーティングによる水素助長疲労き裂進展の抑制効果と負荷周波数の影響
②-1	工学府	高崎 大裕	次世代大規模水素利用技術の実用化に貢献する高温水素中の材料強度に関する研究
②-2	総合理工学府	Miksik Frantisek	Performance of TMPS mesoporous silica nanoparticles as a thermal energy storage medium
②-3	カーボンニュートラル・エネルギー国際研究所	Nguyen Dinh Hoa	Decentralized control and optimization approaches towards a direct energy sharing and trading economy
②-4	カーボンニュートラル・エネルギー国際研究所	Biao Shen	Development of Highly-efficient Multiscale Biphilic Heat Transfer Surfaces for Innovative Thermal Management Schemes
②-5	カーボンニュートラル・エネルギー国際研究所	Hadi Farabi-Asl	Future shape of energy system in Japan to achieve 80% emission reduction goal by 2050, a whole system approach
③-1	工学部	Kovashikawa Maria	Techno-Economic Analysis of BEV Charging Stations and FCEV Hydrogen Stations: Mapping and Implementation
③-2	経済学府	永島 史弥	アジアの産業連関サプライチェーンに付随する大気汚染物質の健康被害評価
③-3	経済学府	中本 裕哉	動的離散選択モデルに基づく自動車のライフサイクル分析
③-4	経済学府	高藪 広隆	金属産業とエネルギー産業のサプライチェーンを考慮した効率性分析と CO ₂ 削減ポテンシャル推計モデルの開発
③-5	経済学府	白新田 佳代子	構造的類似性に基づく CO ₂ 排出構造分析
③-6	地球社会統合科学府	Chumphol Aunphattanasilp	Politicization of Energy: Discursive Strategies of Social Movements in Thailand (1987-2017)
④-1	工学研究院	小出 太郎	エネルギー材料への応用を目指した 20nポルフィリノイドの合成
④-2	工学府	伊川 萌黄	Relationship between Energy Affordability, Health, and Well-being
④-3	工学府	古賀 大貴	新規 N 型半導体材料としてのポルフィセン誘導体に関する研究

④-4	工学府	熊谷 惇也	省エネ意識は環境に配慮した交通手段選択を促進するか？
④-5	工学府	Albert Mufundirwa	Fe-N-C Cathode Catalysts for ORR in PEFCs
④-6	工学府	石橋 悠佑	SOFCの高耐久化に向けたNi合金アノードに関する研究
④-7	工学府	大土井 博俊	MPL/GDL 支持型 新規 PEFC セルの開発
④-8	統合新領域学府	ゲン タオ	加圧下で流動する高分子材料の省エネルギー成形
④-9	総合理工学研究院	末松 昂一	BaTiO ₃ ナノ粒子分散液を用いた BaTiO ₃ /PMMA 透明複合フィルムの開発
④-10	総合理工学府	真鍋 征也	負ミューオン起因ソフトウェア率推定に向けた素過程核反応データの取得
④-11	総合理工学府	廣池 匠哉	数値計算を用いた宇宙用推進機の耐久性評価手法確立
④-12	総合理工学府	Indri Yaningsih	Development of desiccant dehumidification system for low-temperature operations
④-13	総合理工学府	江川 雄亮	高性能かつ長寿命を実現するアノードレイヤ型ホールスラストの開発
④-14	カーボンニュートラル・エネルギー国際研究所	貞清 正彰	結晶性多孔体を用いた新規固体イオン伝導体の開発
④-15	総合理工学府 (カーボンニュートラル・エネルギー国際研究所)	Sampad Ghosh	Energy harvesting from structural surface and urban heat island effect (UHI) alleviation utilizing the thermoelectric effect
④-16	工学府 (カーボンニュートラル・エネルギー国際研究所)	Rocky Kaiser Ahmed	Synthesis and characterization of consolidated composite adsorbents for next generation adsorption heat pump (AHP) applications
④-17	工学府 (カーボンニュートラル・エネルギー国際研究所)	福田 未央	高強度材料における、き裂発生及び微小き裂の進展下限界により決定される疲労限度に対する水素の影響
④-18	理学研究院	宮田 潔志	人工光合成系における光-物質変換過程の直接観測と機構解明

【海外招へい者】

ポスター番号	所属	氏名	研究タイトル
G-1	KAIST(韓国)	Jun Kyu Kim	Outermost Surface Chemistry and its Impact on Oxygen Reduction Reaction Kinetics in Sr- and Al-doped Lanthanum Manganite Thin Film
G-2	ハワイ大学(USA)	Jing Qi	Synthesis and characterization of carbide catalysts supported on carbide supports
G-3	ハワイ大学(USA)	Colin Ferguson	A Hydrogeochemical Assessment of Geothermal Resources in the State of Hawaii
G-4	オーフス大学(デンマーク)	Yigang Yan	Amide Borohydride as A New group of Solid-State Electrolyte
G-5	ルーバンカトリック大学(ベルギー)	Xiao LI	Ar adsorption in the porous magnesium borohydride, a case study by X ray diffraction
G-6	同済大学(中国)	HE Yang	Thermal and energy performance study of green envelope
G-7	シェフィールド大学(イギリス)	Peng Luo	Performance Limit of Silicon Carbide IGBT

【海外特別参加者】

ポスター番号	所属	氏名	研究タイトル
S-1	ニューサウスウェールズ大学 (オーストラリア)	Qiwen Lai	LiBH ₄ electronic destabilisation with Nickel(II) phthalocyanine - leading to a reversible hydrogen storage system

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

<Date> 9:00-12:30, 29th January 2019
 <Venue> Inamori Hall, Kyushu University Ito Campus
 <Language> English
 <Theme> "Q-PIT Workshop: 2nd Sheffield Kyushu Workshop on Electrochemical Energy Conversion"

< Program and Speakers >

Time	Program and Speaker
9:00-9:05	Opening Remarks
9:05-9:20	● Hydrogen Research Activities at Kyushu University Kazunari Sasaki (Senior Vice President, Kyushu University, Japan)
9:20-9:40	● Invited Lecture: Energy 2050 at the University of Sheffield Mohamed Pourkashanian (Head of Energy 2050, University of Sheffield, UK)
9:40-10:00	● Project Overview: Platinum-free Electrocatalysts for Fuel Cells Stephen Lyth (Q-PIT, Kyushu University, Japan)
10:00-10:20	● Invited Lecture: Multiphysics and Multiscale Modelling of PEFC Systems Mohammed Ismail (Energy 2050, University of Sheffield, UK)
10:20-10:40	● Microporous Layers in PEFCs: Combining Experiment with Theory Hironori Nakajima (Department of Mechanical Engineering, Kyushu University, Japan)
10:40-11:00	● Kyushu vs Sheffield! Rapid-Fire Student Presentations
11:00-11:20	● Invited Lecture: DFT Calculations in Electrochemistry Kevin Hughes (Energy 2050, University of Sheffield, UK)
11:20-11:40	● Improved Pt Utilization in PEFCs by Polymer Coating of Nanocarbons Tsuyohiko Fujigaya (Department of Applied Chemistry, Kyushu University, Japan)
11:40-12:00	● Invited Lecture: Multi-scale Modelling of Electrochemical Systems Lin Ma (Energy 2050, University of Sheffield, UK)
12:00-12:20	● DFT Simulations of Electrochemical Systems Aleksandar Staykov (I ² CNER, Kyushu University, Japan)
12:20-12:30	Closing Comments Stephen Lyth / Mohammed Ismail

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

<Date> 14:00-18:00, 29th January 2019
 <Venue> Inamori Hall, Kyushu University Ito Campus
 <Language> English
 <Theme> “Q-PIT & APN Workshop: Low-Carbon Energy Transitions in Asia: Interdisciplinary Perspectives”

< Program and Speakers >

Time	Program and Speaker
14:00-14:10	Introduction <ul style="list-style-type: none"> ● Welcoming remarks
14:10-15:15	Session 1: Global Perspectives on Energy Transitions (Moderator: Assoc. Prof. Robert Lindner) <ul style="list-style-type: none"> ● <i>Enabling a Low-Carbon Transition While Fossil Fuels are Still Abundant: The U.S. Dilemma</i>; Prof. Marilyn A. Brown (Regents' and Brook Byers Professor of Sustainable Systems in the School of Public Policy, Georgia Institute of Technology) ● <i>Empowering the Great Energy Transition (book presentation)</i>; Prof. Scott Valentine (Professor and Associate Dean of Sustainability and Urban Planning, School of Global, Urban and Social Studies, Royal Melbourne Institute of Technology)
15:15-16:15	Session 2: Low-Emission Development Strategies in Asia (Moderator: Assoc. Prof. Hooman Farzaneh) <ul style="list-style-type: none"> ● <i>RPS Mechanism and REC trading for Low Carbon Energy System (Development in China)</i>; Zhang Qi, Professor, Dean, Academy of Chinese Energy Strategy, China University of Petroleum-Beijing ● <i>Making Asia and the Pacific's Skies Blue Again: Implementing 25 Solutions to Help 1 Billion People Breathe Cleaner Air by 2030</i>; Eric Zusman, Research Director, Institute for Global Environmental Strategies (IGES), Japan
16:15-16:30	Short break
16:30-17:30	Session 3: Research Projects on Energy Transitions in Asia at Kyushu University (Moderator: Assoc. Prof. Robert Lindner) <ul style="list-style-type: none"> ● <i>How Does Information and Communication Technology Capital Affect Productivity in the Energy Sector? Evidence from 14 Countries</i>; Hidemichi Fujii, Associate Professor, Department of Economy and Business, Kyushu University ● <i>Contrasting Bottom-Up and Top-Down Policy Approaches to the Japanese Energy Transition</i>; Andrew Chapman, Associate Professor, I²CNER, Kyushu University ● <i>Multiple impact assessment of the Low emission development strategies in Asian cities</i>, Hooman Farzaneh, Associate Professor, Q-PIT, Kyushu University ● <i>Evaluation of the ocean ecosystem: Climate change modeling with backstop technologies</i>; Wataru Nozawa, Assistant Professor, Department of Urban and Environmental Engineering, Faculty of Engineering, Kyushu University
17:30-18:00	Session 4: Panel Discussion & Wrap-up (Moderator: Prof. Shunsuke Managi)
18:00	End of session

Hydrogen Research Activities at Kyushu University



Senior Vice President,
Kyushu University

Kazunari Sasaki

Invited Lecture: Energy 2050 at the University of Sheffield



Head of Energy 2050,
University of Sheffield

Mohamed Pourkashanian

Project Overview: Platinum-free Electrocatalysts for PEFCs



Associate Professor,
Q-PIT, Kyushu University

Stephen Lyth

Invited Lecture: Multiphysics and Multiscale Modelling of PEFC Systems



Research Associate,
Energy 2050, University of Sheffield

Mohammed Ismail

Microporous Layers in PEFCs: Combining Experiment with Theory



Assistant Professor,
Department of Mechanical Engineering,
Kyushu University

Hironori Nakajima

Invited Lecture: DFT Calculations in Electrochemistry



Senior Lecturer,
Energy 2050, University of Sheffield

Kevin Hughes

Improved Pt Utilization in PEFCs by Polymer Coating of Nanocarbons



Assistant Professor,
Department of Applied Chemistry,
Kyushu University

Tsuyohiko Fujigaya

Invited Lecture: Multi-scale Modelling of Electrochemical Systems



Professor,
Energy 2050, University of Sheffield

Lin Ma

DFT Simulations of Electrochemical Systems



Associate Professor,
I²CNER, Kyushu University

Aleksandar Staykov

Session 2: Moderator



Associate Professor,
Q-PIT, Kyushu University

Hooman Farzaneh

Session 3: Moderator



Associate Professor,
Q-PIT, Kyushu University

Robert Lindner

Session 4: Moderator & Wrap-up



Distinguished Professor, Director,
Urban Institute, School of Engineering,
Kyushu University

Shunsuke Managi

Enabling a Low-Carbon Transition While Fossil Fuels are Still Abundant: The U.S. Dilemma



Professor,
Georgia Institute of Technology

Marilyn A. Brown

Empowering the Great Energy Transition (book presentation)



Professor,
Royal Melbourne Institute of Technology

Scott Valentine

RPS Mechanism and REC trading for Low Carbon Energy System (Development in China)



Professor,
China University of Petroleum-Beijing

Zhang Qi

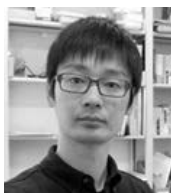
Making Asia and the Pacific's Skies Blue Again: Implementing 25 Solutions to Help 1 Billion People Breathe Cleaner Air by 2030



Research Director,
Institute for Global Environmental
Strategies (IGES)

Eric Zusman

How Does Information and Communication Technology Capital Affect Productivity in the Energy Sector? Evidence from 14 Countries



Associate Professor,
Department of Economy and Business,
Kyushu University

Hidemichi Fujii

Contrasting Bottom-Up and Top-Down Policy Approaches to the Japanese Energy Transition



Associate Professor,
I²CNER, Kyushu University

Andrew Chapman

Multiple impact assessment of the Low emission development strategies in Asian cities



Associate Professor,
Q-PIT, Kyushu University

Hooman Farzaneh

Climate change and ecosystems



Assistant Professor,
Faculty of Engineering,
Kyushu University

Wataru Nozawa

九州水素・燃料電池フォーラム&水素先端世界フォーラム 2019 Day1

<日時> 2019年1月29日(火) 14:00-16:50

<場所> 電気ビルみらいホール

(福岡県福岡市中央区渡辺通2丁目-1-82 電気ビル共創館4階)

<プログラム>

時間	内容	講演者
14:00～14:10	開会挨拶	経済産業省 九州経済産業局 塩田康一 局長 福岡水素エネルギー戦略会議 顧問 小川洋 福岡県知事
14:10～14:40	水素エネルギー社会実現への 産学官地域連携と将来展望	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 教授
14:40～15:10	水素社会実現に向けた経済産業省の取組	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 兼 水素・燃料電池戦略室長 江澤正名 氏
15:10～15:20	休憩	
15:20～16:00	水素社会実現に向けた実証事業への取組	岩谷産業株式会社 上級理事 中央研究所 副所長 繁森敦 氏
16:00～16:30	燃料電池自動車普及に向けた 水素ステーション整備の加速	日本水素ステーションネットワーク合同会社 代表社員職務執行者 (社長) 菅原英喜 氏
16:30～16:50	北九州市の水素社会実現に向けた取組	北九州市 環境局 環境国際経済部 温暖化対策課長 齋村隆一 氏
16:50～17:00	休憩	
17:00～18:30	交流会・名刺交換会	定員 100名、4,500円/人 (予定)

**Hydrogen Energy and Fuel Cell Forum in Kyushu &
International Hydrogen Energy Development Forum 2019 Day2**

<Date> 9 : 30-11 : 40, 30th January 2019

<Venue> Ito Campus Shiiki Hall

<Program and Speaker>

Time	Program	Speaker
9:30-9:40	Opening	Prof.Joichi Sugimura
9:40-10:20	「Introduction of NEDO's Activities for Hydrogen and Fuel Cell Technology」	New Energy and Industrial Technology Development Organization Executive Director Mr.Yoshiteru Sato
10:20-11:00	TBD	U.S. Department of Energy(DOE) Pacific Northwest National Laboratory Senior Research Scientist Dr. Kevin L. Simmons
11:00-11:40	「Hydrogen & Fuel Cells in the Transport Sector and in Energy Transition – Challenges and Opportunities」	Ludwig-Bölkow-Systemtechnik GmbH Senior Consultant Mr. Reinhold Wurster

- HYDROGEN-MATERIALS INTERACTIONS -
HYDROGENIUS, I²CNER, AND HYDROMATE JOINT RESEARCH SYMPOSIUM
HYDROGENIUS FATIGUE AND FRACTURE DIVISION,
I²CNER HYDROGEN MATERIALS COMPATIBILITY DIVISION,
& HYDROMATE

DATE: WEDNESDAY, JANUARY 30, 2019

TIME: 13:00-17:20

VENUE: LECTURE THEATER 302, SHIKI HALL

Time	Speaker	Affiliation	Title
13:00-13:10	Hisao Matsunaga	Kyushu University	Opening Remarks
13:10-13:40	Kenichi Takai	Sophia University	Crystallographic analysis and hydrogen-enhanced lattice defect evaluation beneath hydrogen-related fracture surface of high-strength steels
13:40-14:10	Tom Depover	Ghent University	Evaluation of the interaction of hydrogen with a steel microstructure: key in the development of hydrogen resistant materials
14:10-14:40	Frantz Martin	CEA	Hydrogen diffusion and trapping in FCC alloys: a quantitative approach based on experimental data and numerical analysis
14:40-15:10	Tarlan Hajilou	NTNU	A new insight into hydrogen enhanced cracking by in situ electrochemical microcantilever bending test
15:10-15:40	Break		
15:40-16:10	Akihide Nagao	JFE steel	Experimental and simulational study of hydrogen uptake in low-alloy steels exposed to high-pressure H ₂ gas
16:10-16:40	Kelly Elizabeth Nygren	Cornell University	Hydrogen embrittlement of FCC equi-atomic alloys and mechanisms for intergranular failure
16:40-17:10	Ryosuke Komoda	Fukuoka University	Inhibition of hydrogen environment embrittlement by small amount of oxygen contained in hydrogen gas
17:10-17:20	Brian Somerday	SwRI, I ² CNER	Closing Remarks

-HYDROGEN IN TRIBOLOGICAL PROCESSES-
2019 HYDROGENIUS & I²CNER TRIBOLOGY SYMPOSIUM
 HYDROGENIUS TRIBOLOGY DIVISION
 & I²CNER HYDROGEN MATERIALS COMPATIBILITY DIVISION

DATE: WEDNESDAY, JANUARY 30, 2019

TIME: 13:00-18:00

VENUE: LECTURE THEATER 303, SHIIKI HALL

Time	Program and Speaker
13:00-14:30	Session 1 Chair: Yoshinori Sawae, Kyushu University
13:00-13:40	Keynote Lecture 1 Influence of cryogenic hydrogen environment on the tribological properties of materials Thomas Gradt, Bundesanstalt für Materialforschung und -prüfung (BAM), Germany
13:40-14:05	Invited Talk Friction and wear of DLC and stainless steel in various environmental gas Yuya Hayashi ¹ , Keiji Sasaki ¹ , Taichi Araki ² , Hiroyoshi Tanaka ² , Joichi Sugimura ² ¹ DENSO Corporation, ² Kyushu University, Japan
14:05-14:30	Invited Talk Approaching for low friction with high permittivity material under oil lubrication Motoyuki Murashima, Nagoya University, Japan
14:30-14:40	Break
14:40-15:55	Session 2 Chair: Joichi Sugimura, Kyushu University
14:40-15:05	Invited Talk Molecular simulations for boundary lubrication under specific conditions Hitoshi Washizu, University of Hyogo, Japan
15:05-15:30	Invited Talk Effect of molecular structures of oils on amounts of hydrogen evolution through decomposition of oils by action of discharge plasma Satoshi Nouyama ¹ , Keiji Nakayama ² ¹ Kyodoyushi Co., Ltd., ² Institute of Mesotechnology, Japan
15:30-15:55	Invited Talk Generation and permeation of hydrogen at metal surfaces Hiroyoshi Tanaka, Kyushu University, Japan
15:55-16:00	Break
16:00-16:40	Joint Session with Hydrogen Polymers Team Invited Talk TBD
16:40-16:45	Break

<p>16:45-18:00</p>	<p>Poster Session</p> <p>PT01. Performance of bearings and shaft-seals for reusable rocket engine turbopump Hiromitsu Kakudo, Takashi Yokoyama, Satoshi Takada, Makoto Yoshida Japan Aerospace Exploration Agency (JAXA), Japan</p> <p>PT02. Correlation of PV value with wear of DLC in hydrogen Hirofumi Hashiba¹, Takehiro Morita², Yoshinori Sawae², Joichi Sugimura² ¹Aisan Industry Co., Ltd., ²Kyushu University, Japan</p> <p>PT03. Effect of doped metals on low friction of DLC coatings Kohei Shirahama, Hiroyoshi Tanaka, Joichi Sugimura, Kyushu University, Japan</p> <p>PT04. The effect of oxygen on the tribology of (PEI/GO)15 multilayer solid lubricant coatings on steel substrates Prabakaran Saravanan, Hiroyoshi Tanaka, Joichi Sugimura Kyushu University, Japan</p> <p>PT05. Low friction of carbon fiber filled PTFE in high-purity hydrogen Rui Taninokuchi, Keito Sakaki, Takehiro Morita, Yoshinori Sawae, Joichi Sugimura Kyushu University, Japan</p> <p>PT06. Effect of environmental gas on friction and wear of rubbers in reciprocal and uni-directional sliding Joichi Sugimura, Kazumi Okada, Hiroyoshi Tanaka, Kyushu University, Japan</p> <p>PT07. Fatigue cracking of rubbers in reciprocating sliding contact in hydrogen Joichi Sugimura, Kazumi Okada, Hiroyoshi Tanaka, Kyushu University, Japan</p> <p>PT08. Controlling hydrogen permeation: Effect of base oil polarity on ZDDP film growth Vlad Bogdan Niste¹, Hiroyoshi Tanaka¹, Monica Ratoi², Joichi Sugimura¹ ¹Kyushu University, Japan, ²University of Southampton, UK</p> <p>PT09. Effects of molecular structures on decomposition of lubricating oils at nascent metal surface Shun Honda¹, Hiroyoshi Tanaka¹, Yoji Sunagawa², Joichi Sugimura¹ ¹Kyushu University, ²Idemitsu Kosan Co., Ltd., Japan</p> <p>PT10. Study on hydrogen generation and permeation under rolling contact of steel with phenyl ether lubricants Shotaro Koizumi, Hiroyoshi Tanaka, Joichi Sugimura, Kyushu University, Japan</p>
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**- THERMAL ISSUES FOR HYDROGEN AND NEW REFRIGERANTS
FOR ENERGY SYSTEMS –
HYDROGENIUS AND I²CNER JOINT RESEARCH SYMPOSIUM
HYDROGENIUS THERMOPHYSICAL PROPERTIES DIVISION
& I²CNER THERMAL SCIENCE AND ENGINEERING DIVISION**

DATE: WEDNESDAY, JANUARY 30, 2019

TIME: 13:20 – 17:45

VENUE: CONFERENCE ROOM, 2F, I²CNER BLD. 1

Time	Speaker	Affiliation	Title
13:20-14:00	Laura Fedele	Construction Technologies Institute, National Research Council (ITC-CNR)	Phase Change Materials and Nanofluids as Innovative Materials for Energy Applications
14:00-14:40	Sergio Bobbo	Construction Technologies Institute, National Research Council (ITC-CNR)	Thermophysical Properties of Low GWP Refrigerants
14:40-15:10	Yukitaka Kato	Tokyo Institute of Technology	Energy Storage for Future Energy Systems
15:10-15:40	Ken Yamamoto	Tokyo University of Science	Pinning in the Interface Translation
15:40-16:00	Masahiro Narasaki	Kyushu University	Thermal Transport in Structurally-modified Nanocarbon Materials
16:00-16:10	Break		
16:10-16:50	Anutosh Chakraborty	Nanyang Technological University	Water Adsorption Study on Various Synthesized MOFs Employing Grand Canonical Monte Carlo Simulation and Experimental Investigations
16:50-17:20	Jin Miyawaki	Kyushu University	Development of Activated Carbons with Enhanced Effective Adsorption Amount
17:20-17:40	Mahabubul Muttakin	Kyushu University	Performance Evaluation of a Silica Gel-Water Adsorption Chiller Involving Mass and Heat Recovery Processes
17:40-17:45	Naoya Sakoda	Kyushu University	Closing Remarks

International Symposium of Hydrogen Polymers Team, HYDROGENIUS

Date: **Wednesday, 30th January 2019**

Venue: **Shiiki Hall, Kyushu University**

Oral Session

13:00-14:40 **Session 1**

Chairperson: Dr Hiroaki ONO, Kyushu University

13:00-13:20 Opening Remarks/
Polymeric Materials for Hydrogen Devices
Prof Shin NISHIMURA, Kyushu University (Japan)

13:20-14:00 TBD
Dr Azdine NAIT-ALI, Institut Pprime, ENSMA (France)

14:00-14:40 Effect of stress hold time on fatigue life for injection molded PA11
Prof Takashi KURIYAMA, Yamagata University (Japan)

14:40-15:00 Coffee Break

Session 2

Chairperson: Dr Hiroaki ONO, Kyushu University

15:00-15:40 Influence of High-Pressure Hydrogen Gas on Crystalline Polymers:
an Attempt at In-Situ FTIR Measurements
Prof Fumitoshi KANEKO (Japan)

15:40-16:50 **Joint Symposium of Hydrogen Tribology Team and Hydrogen Polymers Team**

15:40-16:20 TBD
Dr Kevin SHIMMONS, Pacific Northwest National Laboratory (USA)

16:20-16:25 Closing Remarks of Oral Session
Prof Shin NISHIMURA, Kyushu University (Japan)

16:25-16:30 Break

16:30-18:00 **Poster Session**

PP01 Activities of Research Group on Elastomers for Hydrogen Equipment
Shin NISHIMURA, Kyushu University (Japan)

PP02 Establishment of evaluating methods aiming to develop long-life sealing rubber
-New attempt of HYDROGENIUS Polymer Team-
Hirotda FUJIWARA, Kyushu University (Japan)

PP03 Analysis of filler types in the viewpoint of influence on hydrogen property in NBR
Hirotda FUJIWARA, Kyushu University (Japan)

PP04 Influence of morphology on high-pressure hydrogen property of rubber material
Hirotda FUJIWARA, Kyushu University (Japan)

PP05 Influence of different rubber compounds with different compounding methods under
high pressure hydrogen gas
Takuya KAMINO, Kurume College (Japan)

- PP06 Estimation of void volume generated by high pressurized hydrogen exposure using a dielectric relaxation measurement
Masahiro KASAI, Kyushu University (Japan)
- PP07 Vibrational spectroscopic study on the interaction between carbon black and rubber molecular chain
Hiroto YAMAGUCHI, Kogakuin University (Japan)
- PP08 Effect of mechanical properties of diaphragm rubber on gas transfer efficiency for hydrogen circulation blower
Ryo HISATSUNE, Graduate school of engineering Kyushu University (Japan)
- PP09 Mechanical Properties and Degradation of NR with Different State of Cure
Kazumi NAKAYAMA, Chemicals Evaluation and Research Institute (Japan)
- PP10 The compound design of FKM for compressors on Hydrogen Refueling Stations
Ryo TAKAHASHI, Takaishi Industry co.,Ltd (Japan)
- PP11 Study on High-pressure Hydrogen Seal Durability of Rubber O-ring
Atsushi KOGA, NOK CORPORATION (Japan)
- PP12 Influence of phase transition on Polytetrafluoroethylen(PTFE) with high pressure hydrogen exposure
Hirotda FUJIWARA, Kyushu University (Japan)
- PP13 Hydrogen permeation property of polyethylene under high pressure condition
Hirotda FUJIWARA, Kyushu University (Japan)
- PP14 Influence of the high-pressure hydrogen gas exposure repetition on the internal damage evolution of high-density polyethylene
Hiroaki ONO, Kyushu University (Japan)
- PP15 Structure Change Caused by Exposure to High-pressure Hydrogen Gas: Influence of Crystallinity in Polyamide11
Keiko OHYAMA, Kyushu University (Japan)
- PP16 Effect of Propylene carbonate on ionic conductance of Polyethylene carbonate polymer electrolyte
Kazuma MATSUSHITA, Graduate school of engineering Kyushu University (Japan)

IMCE Special Lecture
Next Generation's Li-ion Battery Materials

<Date> 13:00-17:00, 30th January, 2019

<Venue> Institute for Materials Chemistry and Engineering Central Building Room 111
Kyushu University Chikushi Campus (6-1 Kasuga-Koen, Kasuga-shi, Fukuoka)

<Language> Japanese

<Technical Program>

時間	プログラム・講演者
13:00-15:00	Mr. Ippei OHTA Japan Patent Office, Patent Examination Department(Electronic Technology) “Analysis of Invention and Evaluation of New Technology from the View Point of Patent Examiner of Japan Patent Office”
15:00-17:00	Associate Prof. Masashi Okubo Department of Chemical System Engineering, The University of Tokyo “High Energy Density of Secondary Battery; Oxygen Redox Reaction in Solid“



INTERNATIONAL INSTITUTE FOR CARBON-NEUTRAL ENERGY RESEARCH

**2019 I²CNER ANNUAL SYMPOSIUM:
ENERGY TRANSITIONS AND THE ROLE OF CCS
TOWARD A CARBON-NEUTRAL ENERGY SOCIETY**

*I²CNER Hall
Ito Campus
Kyushu University*

THURSDAY, JANUARY 31, 2019

- 9:30 a.m. Opening Remarks
Dr. Chiharu Kubo, *President, Kyushu University* (5 min)
Dr. Akira Ukawa, *WPI Program Director, Japan Society for the Promotion of Science* (5 min)
Mr. Ross Matzkin-Bridger, *Energy Attaché, U.S. Embassy Tokyo, and Director, U.S. Department of Energy's Japan Office* (5 min)
Prof. Petros Sofronis, *Director, I²CNER, Kyushu University* (5 min)
- 9:50 a.m. Invited Lecture
"Understanding Transitions: the Case of the Energy Transition"
Prof. Geert Verbong, *School of Innovation Sciences, Eindhoven University of Technology*
- 10:45 a.m. **Coffee Break**
- 11:05 a.m. Invited Lecture
"Clean Energy Technologies for Economic Transitions"
Dr. Jill Engel-Cox, *Joint Institute for Strategic Energy Analysis, U.S. National Renewable Energy Laboratory*
- 12:00 p.m. I²CNER Presentation
"I²CNER Energy Transition Efforts for a Carbon-Neutral Energy Society"
Prof. Kenshi Itaoka, *I²CNER, Kyushu University*
- 12:30 p.m. **Group Photo Session & Lunch**

- 1:25 p.m. **Invited Lecture**
“CCS and its Role in the Low-Carbon Energy Transition”
Prof. Michael Celia, Princeton Environmental Institute, Princeton University
- 2:20 p.m. **I²CNER Presentation**
“Monitoring for Effective and Safe CO₂ Storage”
Prof. Takeshi Tsuji, I²CNER, Kyushu University
- 2:50 p.m. **Invited Lecture**
“Overview of Climate Change Measures and Proactive Initiatives for Realizing CCS in Japan”
Mr. Hitoshi Nissaka, Climate Change Projects Office, Global Environment Bureau, Ministry of the Environment, Japan
- 3:20 p.m. **Coffee Break**
- 3:40 p.m. **Invited Lecture**
“CCS as a Vital Option towards a Sustainable Future”
Dr. Makoto Akai, National Institute of Advanced Industrial Science and Technology
- 4:35 p.m. **Invited Lecture**
“Energy Transitions, Moral Hazard and Magical Thinking”
Dr. David Reiner, Judge Business School, University of Cambridge
- 5:30 p.m. **Wrap up and Implications**
Prof. Andrew Chapman, I²CNER, Kyushu University
Prof. Michael Celia, Princeton Environmental Institute, Princeton University
- 6:00 p.m. **Reception**
Venue: I²CNER Lounge

Presentation times:

External invitees: 40 minutes + 15 minutes Q&A

Government representatives and I²CNER faculty: 20 minutes + 10 minutes Q&A

Invited Lectures



Understanding Transitions: the Case of the Energy Transition

Prof. Geert Verbong

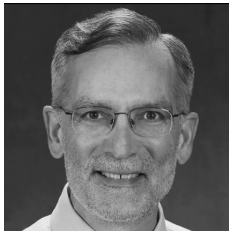
School of Innovation Sciences, Eindhoven University of Technology
Professor



Clean Energy Technologies for Economic Transitions

Dr. Jill Engel-Cox

Joint Institute for Strategic Energy Analysis, U.S. National Renewable Energy Laboratory
Director



CCS and its Role in the Low-Carbon Energy Transition

Prof. Michael Celia

Princeton Environmental Institute, Princeton University
Director



Overview of Climate Change Measures and Proactive Initiatives for Realizing CCS in Japan

Mr. Hitoshi Nissaka

Climate Change Projects Office, Global Environment Bureau, Ministry of the Environment, Japan
Deputy Director



CCS as a Vital Option towards a Sustainable Future

Dr. Makoto Akai

National Institute of Advanced Industrial Science and Technology
Emeritus Researcher



Energy Transitions, Moral Hazard and Magical Thinking

Dr. David Reiner

Judge Business School, University of Cambridge
Senior Lecturer

-MATERIALS FOR PHOTO & ELECTRIC ENERGY CONVERSION-
I²CNER INTERNATIONAL WORKSHOP
MOLECULAR PHOTOCONVERSION DEVICES DIVISION
& ELECTROCHEMICAL ENERGY CONVERSION DIVISION

DATE: FRIDAY, FEBRUARY 1, 2019

TIME: 9:30-17:30

VENUE: I²CNER HALL B

Time	Speaker	Affiliation	Title
9:30-9:40	Prof. Hiroshige Matsumoto	I ² CNER, Kyushu University	Opening Remarks
9:40-10:00	Prof. Toshinori Matsushima	I ² CNER, Kyushu University	Efficient and stable metal halide perovskite solar cell
10:00-10:20	Prof. Motonori Watanabe	I ² CNER, Kyushu University	Dye sensitized photocatalyst
10:20-10:40	Prof. Alexander Staykov	I ² CNER, Kyushu University	Interaction of SrO-terminated SrTiO ₃ surface with oxygen, carbon dioxide, and water
10:40-11:00	Prof. Minkyu Son	I ² CNER, Kyushu University	Photoelectrochemical water splitting for hydrogen generation
11:00-11:40	Prof. Ryu Abe	Kyoto University	New mixed-anion semiconductors for photocatalytic water splitting under visible light
11:40-12:00	Dr. Nuttavut Kosem	I ² CNER, Kyushu University	Photo bio catalyst for H ₂ production
12:00-13:00	Lunch		
13:00-13:40	Prof. Lane Martin	U.C. Berkley	Leveraging Thin-Film Epitaxy to Design Optimal Perovskite Structures for High Ionic Conduction
13:40-14:20	Dr. Qiwen Lai	the University of New South Wales	Hydrogen storage with nanoscaled complex hydrides
14:20-15:00	Prof. Harry Tuller	Massachusetts Institute of Technology	Advances in the use of optical absorption spectroscopy in investigating defect equilibria and oxygen exchange kinetics in mixed ionic-electronic conducting SOFC cathodes
15:00-15:20	Coffee Break		
15:20-16:00	Dr. Daniele Pergolesi	Paul Scherrer Institute (PSI)	Oxynitride thin film model systems for solar water splitting

16:00-16:20	Prof. Kaveh Edalati	I ² CNER, Kyushu University	High-pressure torsion treatment of photocatalysts
16:20-16:40	Dr. Kulbir Kaur	I ² CNER, Kyushu University	Microstructural and Electronic Properties of the YSZ/CeO ₂ interface
16:40-17:00	Dr. Vincent Thoreton	I ² CNER, Kyushu University	Grain boundary diffusion in La _{0.6} Sr _{0.4} Co _{0.2} Fe _{0.8} O _{3+δ}
17:00-17:20	Dr. Dino Klotz	I ² CNER, Kyushu University	Negative capacitance or inductive loop; A general assessment of a common low frequency impedance feature
17:20-17:30	Prof. John A. Kilner	Imperial College London	Closing Remarks

-CARBON CAPTURE AND UTILIZATION RESEARCH
FOR NEGATIVE CARBON EMISSIONS-
I²CNER INTERNATIONAL WORKSHOP
CATALYTIC MATERIALS TRANSFORMATIONS DIVISION
& CO₂ CAPTURE AND UTILIZATION DIVISION

DATE: FRIDAY, FEBRUARY 1, 2019

TIME: 13:00 -17:30

VENUE: I²CNER HALL C

Time	Speaker	Affiliation	Title
13:00-13:05	Prof. Shigenori Fujikawa	I ² CNER, Kyushu University	Opening Remarks
13:05-13:35	Dr. Taisei Nishimi	ARPCHEM	CCU and Artificial Photosynthesis
13:35-14:05	Prof. Osamu Ishitani	Tokyo Institute of Technology	Photocatalytic and Electrocatalytic Reduction of Low Concentration of CO ₂
14:05-14:30	Dr. Tatsuya Ando	I ² CNER, Kyushu University	Multifunctional Catalysts for Hydrogen Fuel Cells
14:30-14:55	Prof. Miho Yamauchi	I ² CNER, Kyushu University	Hydrogenation of carboxylic acid derivatives as a CO ₂ equivalent chemical
14:55-15:20	Prof. Paul Kenis	UIUC	Co-Electrolysis as a Path to Economic Feasibility of Electrochemical Reduction of CO ₂ to Value-Added Intermediates
15:20-15:30	Coffee Break		
15:30-16:00	Prof. Masaharu Ishii	University of Tokyo	Biochemical analyses of fast-growing CO ₂ fixers: hydrogen-oxidizing bacteria
16:00-16:30	Dr. Etsushi Kato	The Institute of Applied Energy	Perspective on the Negative Emissions Technologies (NETs)
16:30-17:00	Dr. Fuminori Sano	RITE	Analysis of the role of CCS in long-term CO ₂ emission reduction by integrated assessment model
17:00-17:25	Dr. Roman Selyanchyn	I ² CNER, Kyushu University	Highly efficient CO ₂ /N ₂ separation by ultimate thinning of composite membranes
17:25-17:30	Prof. Miho Yamauchi	I ² CNER, Kyushu University	Closing Remarks

-MONITORING AND MODELING OF CO₂ STORAGE RESERVOIR -
I²CNER INTERNATIONAL WORKSHOP
CO₂ STORAGE DIVISION

DATE: FRIDAY, FEBRUARY 1, 2019

TIME: 12:30-17:20

VENUE: I²CNER HALL A

Time	Speaker	Affiliation	Title
12:30-12:50	Takeshi Tsuji	Kyushu University	Activities of CO ₂ storage division in 2018
12:50-13:10	Michael Celia	Princeton University	Representation of pore- and core-scale processes in large-scale models for geological carbon storage
13:10-13:40	Atsuhiko Miyagi	Taisei	Parallel workflow for well placement optimization in a heterogeneous reservoir using covariance matrix adaptation evolution strategy
13:40-14:00	Break		
14:00-14:30	Kenneth Christensen	University of Notre Dame	Ongoing rock-inspired, micromodel experiments at reservoir conditions to explore CO ₂ flow dynamics during injection
14:30-14:50	Fei Jiang	Yamaguchi University & Kyushu University	Viscous coupling effects on hydraulic conductance of three-phase flow in porous media (Simulation)
14:50-15:10	Keigo Kitamura	Kyushu University	Seismic and electrical monitoring of CO ₂ behavior in two types of sandstones (Lab)
15:10-15:30	Jihui Jia	China University of Petroleum & Kyushu University	CO ₂ mineralization modeling using <i>Ab Initio</i> Molecular Dynamics
15:30-15:50	Break		
15:50-16:20	Romain Chassagne	Heriot-Watt University	Reservoir characterization and seismic monitoring for Oil & Gas
16:20-16:40	Claus Aranha	University of Tsukuba	Machine learning and evolutionary algorithms for reservoir modeling
16:40-17:00	Tatsunori Ikeda	Kyushu University	Continuous monitoring of seismic velocity in the Nankai subduction zone from ocean bottom cable recordings of ambient noise
17:00-17:20	Andri Hendriyana	Kyushu University	Automated method to detect and locate long-period seismicity emitted by fluid migration

–SHARING INNOVATIONS IN ENERGY TRANSITION RESEARCH–
I²CNER INTERNATIONAL WORKSHOP
ENERGY ANALYSIS DIVISION

DATE: FRIDAY, FEBRUARY 1, 2019

TIME: 9:30–16:30

VENUE: CONFERENCE ROOM 203, CENTER FOR CO-EVOLUTIONAL SOCIAL SYSTEMS

Time	Speaker	Affiliation	Title
9:30-9:45	Prof. Kenshi Itaoka	I ² CNER, Kyushu University	Opening Remarks
9:45-10:10	Prof. Andrew Chapman	I ² CNER, Kyushu University	EAD transitions work toward an agent-based model – socio-technical regimes.
10:10-10:35	Prof. Geert Verbong	Eindhoven University of Technology	Enabling Technologies and the Energy Transition
10:35-11:00	Prof. Yasushi Maruyama	Nagoya University	Energy Transition and Community Power Movements in Japan
11:10-11:30	Coffee Break		
11:30-11:55	Prof. David Reiner	Cambridge Judge Business School, University of Cambridge	Social Aspect of the Energy Transition
11:55-12:20	Dr. Anshuman Chaube	University of Illinois at Urbana-Champaign	Nuclear Energy and the Energy Transition
12:30-13:30	Networking Lunch		
13:30-13:55	Dr. Hadi Farabi-Asl	I ² CNER, Kyushu University	Renewable Heat and the Energy Transition
13:55-14:20	Prof. Benjamin McLellan	Kyoto University	Resources and the Energy Transition
14:30-16:30	Guided Discussion – Prof. Kenshi Itaoka		

APPLIED MATH CHALLENGES IN ENERGY SYSTEMS
I²CNER & IMI INTERNATIONAL WORKSHOP
APPLIED MATH FOR ENERGY

DATE: FRIDAY, FEBRUARY 1, 2019

TIME: 1:00PM – 5:30PM

VENUE: SEMINAR ROOM 3105-6, CENTER ZONE BLDG. 3

Time	Speaker	Affiliation	Title
1:00 – 1:05	Nguyen Dinh Hoa	I ² CNER & IMI	Opening Address
1:05 – 1:25	Hiroaki Watanabe	I ² CNER	TBD
1:25 – 1:45	Yasuhide Fukumoto	IMI	Multi-scale analysis of a premixed flame and its modeling by an interface of velocity discontinuity
1:45 – 2:15	Discussions (Chair: Prof. Watanabe)		
2:20 – 3:00 (presentation, Q & A)	Shinji Hara	Chuo University and Tokyo Institute of Technology	TBD
3:00 – 3:40 (presentation, Q & A)	Yuliy Baryshnikov	University of Illinois at Urbana- Champaign	Cyclic phenomena and iterated integrals
3:40 – 4:20 (presentation, Q & A)	Toru Yano	Toshiba	Applied mathematical methods for energy management in supply and consumer sides
4:20 – 4:40	Junichi Murata	Faculty of Information Science and Electrical Engineering	Modelling human decision making using inverse optimization
4:40 – 5:00	Kei Hirose	IMI	Statistical modeling for electricity consumption data analysis
5:00 – 5:30	Discussions (Chair: Prof. Murata)		

< Kyushu University COI >
<Center of Coevolutionary Research for Sustainable Communities (C²RSC) Symposium >

<Date> 13:00-17:00, February 1st, 2019
 <Venue> 2F Hall, Research Facilities for Co-Evolutional Social Systems, Ito Campus, Kyushu University
 <Language> Japanese and English (Special Lecture)
 <Theme> “Sustainable Communities through locally generated -locally used energy and revitalized economy”

Time	Program and Speaker
13:00-13:25	<u>Opening Remarks</u> Prof. Chiharu Kubo, President of Kyushu University Mr. Masaaki Nishijo, Director, University – Industry Collaboration and Regional R&D Policy Division, Science and Technology Policy Bureau, Ministry of Education, Culture, Sports, Science and Technology (MEXT) Ms. Yoshiko Shirokizawa, Executive Director, Japan Science and Technology Agency (JST) Mr. Junichi Sato, Visionary Leader of Vision 3, COI Program
13:25-13:40	<u>Overview of Kyushu University COI</u> Mr. Shinya Ishihara, Project Leader, Kyushu University COI (C ² RSC), NTT West Corporation
13:40-14:40	<u>Special Lecture</u> Dr. Jill Engel-Cox (Director, Joint Institute for Strategic Energy Analysis U.S. National Renewable Energy Laboratory Golden, Colorado, USA) “Clean Energy Technologies for Economic Development at Global- and Community-Scales ” (simultaneous translation)
14:40-14:55	<u>Break</u>
14:55-15:55	<u>Overview of the Research Themes</u> “Coevolutionary research for sustainable communities in Kyushu University COI” Prof. Masato Wakayama, Research Leader, Kyushu University COI (C ² RSC), Executive Vice President, Kyushu University <u>Research Themes</u> “COI research on fundamental energy technologies” Prof. Kazunari Sasaki, Senior Vice President, Kyushu University “Toward the coexistence between decarbonization and stability of energy systems” Prof. Ryuji Matsushashi, The University of Tokyo COI Satellite Leader, The University of Tokyo “Collaborative and Shared Mobility for Sustainable City” Assoc. Prof. Ryo Ariyoshi, Yokohama National University “Data linkage platform for enhancing urban safety, security and liveliness” Assoc. Prof. Shigeru Takano, Kyushu University “Challenge by Industrial mathematics toward creating sustainable coevolution society” Prof. Yasuhide Fukumoto, Kyushu University
15:55-16:55	<u>Introduction of Social implementation (Participating institutions)</u> “Highly-efficient SOFC-based energy technologies” Dr. Yoshio Matsuzaki, Tokyo Gas Co., Ltd., Visiting prof., Kyushu University “Verification of effects to suppress imbalances due to forecast errors in photovoltaic outputs after the feed-in-tariff -Utilizing remote control of electric appliances with HEMS-” Mr. Norito Shiraiwa, Miyama Smart Energy Co., Ltd. “Development of the support system for special bus service operation” Mr. Kota Fukushige, Nish-Nippon Railroad Co., Ltd. “Hitachi Image Analysis Solution for sustainable urban development that everyone can move peacefully and comfortably” Mr. Kentarou Yoshikawa, Hitachi, Ltd.
16:55-17:00	<u>Closing Remarks</u> Prof. Masato Wakayama, Research Leader, Kyushu University COI (C ² RSC), Executive Vice President, Kyushu University
17:00-18:00	<u>Networking Event (+Poster session) (Fee : JPY 1,000-)</u> Poster session: 12 : 00~18 : 00

※The program is subject to change.

Special Lecture



Clean Energy Technologies for Economic Development at Global- and Community-Scales

Director,
Joint Institute for Strategic Energy Analysis
U.S. National Renewable Energy Laboratory Golden, Colorado, USA

Dr. Jill Engel-Cox

Abstract

Energy systems across the world are undergoing fundamental transformations. Electricity and heat production is becoming cleaner and more distributed, driven by declining energy prices and higher technology efficiencies, as well as a desire to reduce environmental impact. The technologies that produce clean energy, such as solar photovoltaic panels, wind turbines, and lithium ion batteries for vehicles and storage, depend less on fuel costs and more on technology costs and global manufacturing and trade. Therefore, innovations in technology manufacturing, systems integration, and deployment can reduce costs of materials, equipment, labor, operations, and transportation, across all the links in the energy supply chain. The advanced and cleaner energy systems being deployed have resulted in communities gaining a greater role in creating and using energy from local resources, as well as increasing their participation in the value chain from research, manufacturing, and deployment. The clean energy trends are expected to continue and perhaps grow through expansion of clean energy technologies for industrial and transportation sectors, although there are many possible future scenarios due to the diversity of resources and societal objectives in different communities, countries, and regions. This presentation will summarize the status and potential futures of key clean energy technologies and their manufacturing, deployment, and integration with other energy systems and sectors.



Figure. The advances in wind turbine technologies from small wind mills to pump water (right) to large wind turbines to produce electricity (left) are transforming our energy systems at all scales. (Photo from <https://images.nrel.gov/>.)

Overview of Kyushu University COI

Project Leader, Center of Coevolutionary Research for Sustainable Communities, Kyushu University
NTT West Corporation

Shinya Ishihara

Research Themes: COI research on fundamental energy technologies

Energy Leader, Center of Coevolutionary Research for Sustainable Communities, Kyushu University
Professor, Senior Vice President, Kyushu University

Kazunari Sasaki

Research Themes: Collaborative and Shared Mobility for Sustainable City

Sub-leader, Yokohama National University COI Satellite
Associate Professor, Institute of Urban Innovation, Yokohama National University

Ryo Ariyoshi

Research Themes: Challenge by Industrial mathematics toward creating sustainable coevolution society

Math for Industry Leader, Center of Coevolutionary Research for Sustainable Communities, Kyushu University
Professor, Division of Applied Mathematics, Institute of Mathematics for Industry(IMI), Kyushu University

Yasuhide Fukumoto

Introduction of Social implementation: Verification of effects to suppress imbalances due to forecast errors in photovoltaic outputs after the feed-in-tariff -Utilizing remote control of electric appliances with HEMS-

Director, Power Business Division, Miyama Smart Energy Co., Ltd.

Norito Shiraiwa

Introduction of Social implementation: Hitachi Image Analysis Solution for sustainable urban development that everyone can move safely and comfortably

Senior Engineer, Smart Society Development Department, Society5.0 Promotion and Urban Solution Development Division, Social Innovation Business Division, Hitachi, Ltd.

Kentaro Yoshikawa

Overview of the Research Themes: Coevolutionary research for sustainable communities in Kyushu University COI

Research Leader, Center of Coevolutionary Research for Sustainable Communities, Kyushu University
Professor, Executive Vice President, Kyushu University

Masato Wakayama

Research Themes: Toward the coexistence between decarbonization and stability of energy systems

Leader, The University of Tokyo COI Satellite
Professor, Dept. of Electrical Engineering and Information Systems, Graduate School of Engineering, The University of Tokyo

Ryuji Matsuhashi

Research Themes: Data linkage platform for enhancing urban safety, security and liveliness

ICT Sub-leader, Center of Coevolutionary Research for Sustainable Communities
Associate Professor, Kyushu University

Shigeru Takano

Introduction of Social implementation: Highly-efficient SOFC-based energy technologies

Visiting professor, Kyushu University (NEXT-FC)
Chief Researcher, Fundamental Technology Dept., Tokyo Gas Co., Ltd.

Yoshio Matsuzaki

Introduction of Social implementation: Development of the support system for special bus service operation

Manager, Marketing Planning Department,
Bus Transportation Headquarters,
Nishi-Nippon Railroad Co., Ltd.

Kota Fukushige

Chikushi Symposium

<Date> 13:00-17:30, 1st February 2019
 <Venue> Kyushu University Chikushi Campus Chikushi Hall C-Cube 1st Floor
 (6-1 Kasuga-Koen, Kasuga-shi, Fukuoka)
 <Language> Japanese and English (simultaneous translation)
 <Theme> “Crossroads between Green Technology and Cutting-edge Measurement Science”

<Program and Speaker>

Time	Program and Speaker
13:00-13:15	Opening Remarks & Introduction of Research Center for Green Technology, Prof. Michitaka OHTAKI (Director of Research Center for Green Technology, Kyushu University)
13:15-13:25	Introduction of Research Center for Synchrotron Light Applications Prof. Makoto TOKUNAGA (Vice-Director of Research Center for Synchrotron Light Applications)
13:25-14:10	Keynote Speech① Dr. Akira YOSHINO (Honorary Fellow, Asahi Kasei Corp, Visiting Professor, Research Center for Green Technology, Kyushu University)
14:10-14:40	Invited Lecture① Prof. Emeritus Naotoshi NAKASHIMA (Kyushu University)
14:40-14:55	Break
14:55-15:40	Keynote Speech② Prof. Emeritus Masaharu OSHIMA (University of Tokyo)
15:40-16:10	Invited Lecture② Prof. Syo MATSUMURA (Director of Ultramicroscopy Research Center, Kyushu University)
16:10-16:55	Keynote Speech③ Prof. S.Ted OYAMA (Department of Chemical System Engineering, University of Tokyo , University of Tokyo)
16:55-17:25	Invited Lecture③ Dr. Michihisa KOYAMA (Unit Director, C4GR-Global Research Center for Environment and Energy based on Nanomaterials Science, Technology Integration Unit, Center for Green Research on Energy and Environmental Materials, National Institute for Materials Science)
17:25-17:30	Closing Remarks Prof. Yuji SOEJIMA (Director of Research Center for Synchrotron Light Applications)



Keynote Speech 1

リチウムイオン電池が拓く未来の車社会

Dr. Akira YOSHINO

Honorary Fellow, Asahi Kasei Corp, Visiting Professor, Research Center for Green Technology, Kyushu University



Keynote Speech 2

エネルギー材料・デバイスの放射光解析

Prof. Emeritus Masaharu OSHIMA

University of Tokyo



Keynote Speech 3

Kinetic and Spectroscopic Studies of Catalytic Mechanisms:
Hydrodeoxygenation of Biomass Feedstocks on Transition Metal Phosphides

Prof. S. Ted OYAMA

Department of Chemical System Engineering,
University of Tokyo



Invited Lecturer 1

新しい酸素還元反応 (ORR) / 酸素発生反応 (OER) 触媒のデザイン

Prof. Emeritus Naotoshi NAKASHIMA

Kyushu University



Invited Lecturer 2

金属ナノ粒子の原子状態解析の進展と新たな触媒機能の開発

Prof. Syo MATSUMURA

Director of Ultramicroscopy Research Center
Department of Applied Quantum Physics and Nuclear Engineering
Graduate School of Engineering, Kyushu University



Invited Lecturer 3

触媒分野における計算技術の活用

Dr. Michihisa KOYAMA

Unit Director, C4GR-Global Research Center for Environment and Energy based on Nanomaterials Science, Technology Integration Unit, Center for Green Research on Energy and Environmental Materials