

# Program

**October 17 (Wed.), 2018**

## **Part 1**

- 10:00 1-1** Part 1 Opening
- 10:15 1-2** DLR activities : Mr. Bernhard Milow
- 10:30 1-3** IAE activities : Dr. Hiroshi Hasuike

## **Energy Systems Transformation Pathways**

- 10:45 1-4** ENERGY SYSTEM TRANSFORMATIONS FOR THE LONG TERM MITIGATION TARGET IN JAPAN  
Diego Silva Herran<sup>1</sup>, Shinichiro Fujimori<sup>2,3,4</sup> and Mikiko Kainuma<sup>1,4</sup> ( <sup>1</sup>Institute for Global Environmental Strategies, <sup>2</sup>Kyoto University, <sup>3</sup>National Institute for Environmental Studies and <sup>4</sup>International Institute for Applied Systems Analysis)
- 11:15 1-5** ANALYSIS OF JAPANESE ENERGY SYSTEM TOWARD 2050 USING TIMES-JAPAN MODEL  
Etsushi Kato and Atsushi Kurosawa(The Institute of Applied Energy)
- 11:45 1-6** SCENARIO ANALYSIS OF ENERGY SYSTEM TRANSITION FOR METROPOLITAN REGIONS OF EASTERN CHINA  
Mengzhu Xiao<sup>1,2</sup>, Sonja Simon<sup>1</sup>, Thomas Pregger<sup>1</sup> and Manuel Wetzel<sup>1</sup> ( <sup>1</sup>German Aerospace Center and <sup>2</sup>Helmholtz Research School on Energy Scenarios)
- 12:15 Lunch

## **High-resolution Energy System Modeling**

- 13:15 1-7** STUDY ON DECARBONIZING JAPANESE POWER GRID WITH OPTIMAL POWER GENERATION MIX MODEL  
Ryoichi Komiyama and Yasumasa Fujii (The University of Tokyo)
- 13:45 1-8** MODEL EXPERIMENT ON COMPARATIVE MODELLING OF GERMANY'S ELECTRICITY SUPPLY IN 2050  
Hans Christian Gils and Thomas Pregger (German Aerospace Center)

## **Advancements in Hydrogen Research and Policy**

- 14:15 1-9** OUTCOME OF HYDROGEN ENERGY RESEARCH IN JAPAN AND TASKS FOR PRACTICAL APPLICATION  
Ken-ichi Aika (Tokyo Institute of Technology)
- 14:45 1-10** CURRENT STATUS OF DEVELOPMENT OF HYDROGEN TECHNOLOGY IN JAPAN AND THE GOVERNMENTAL POLICIES  
Ko Sakata<sup>1,2</sup> ( <sup>1</sup>The Institute of Applied Energy and <sup>2</sup>Hydrogen Energy Systems Society of Japan)
- 15:15 Break

## **Advancements in Hydrogen Research and Policy**

- 15:45 1-11** AN ASSESSMENT OF URBAN ENERGY SYSTEMS FOCUSING ON UNUTILIZED HEAT SOURCE AND WEATHER CONDITIONS  
Shunsuke Mori<sup>1</sup>, Aya Kishimoto<sup>2</sup> and Satoshi Ohnishi<sup>1</sup> ( <sup>1</sup>Tokyo University of Science and <sup>2</sup>TAISEI CORPORATION)

- 16:15 1-12** FUTURE PV COST STRUCTURE AND IMPORTANCE OF HIGH GENERATION EFFICIENCY  
Toshihiro Inoue<sup>1</sup> and Koichi Yamada<sup>1,2</sup> ( <sup>1</sup>Japan Science and Technology Agency and <sup>2</sup>The University of Tokyo)

### **Wind, Geothermal and Hydro Power**

- 16:45 1-13** QUANTITATIVE EVALUATION ON INDUCED EARTHQUAKE BY HOT DRY ROCK POWER GENERATION  
Tamaki Ishikawa and Koichi Yamada (Japan Science and Technology Agency)
- 17:15 1-14** INTERNATIONAL COLLABORATION IN IEA WIND TECHNOLOGY COLLABORATION PROGRAMME  
Masataka Owada (Wind Energy Institute of Tokyo Inc.)
- 17:45 1-15** POTENTIAL CAPACITY AND COST OF PUMPED-STORAGE POWER IN JAPAN  
Ryuzo Asada and Koichi Yamada (Japan Science and Technology Agency)

## **October 18 (Thu.), 2018**

### **Part 1**

#### **Woody Biomass and PV-Storage Systems in Decentralized Supply Systems 1**

- 09:00 1-16** WOODY BIOMASS POWER PLANTS AND LOCAL COOPERATION IN JAPAN  
Ayano Takeuchi (Toho University)

- 09:30 2-1** Part 2 Opening

### **Part 2**

#### **New Concepts of Energy Storage**

- 09:45 2-2** CARNOT BATTERIES FOR TERAWATT SCALE ELECTRICITY STORAGE  
André Thess<sup>1</sup> (German Aerospace Centre)
- 10:15 2-3** INTEGRATED THERMAL ENERGY CONVERSION AND STORAGE - THE NEXT DISRUPTIVE TECHNOLOGY  
Yulong Ding (University of Birmingham)
- 10:45 Break
- 11:10 2-4** THERMAL ENERGY STORAGE POWER PLANT WITH SYNCHRONOUS INERTIA  
Toru Okazaki (The Institute of Applied Energy)
- 11:30 2-5** SIMULATION OF A WINDTHERMAL ENERGY SYSTEM PILOT-PLANT  
Christoph Gentner, Alexander Görmann, Malte Neumeier, Marco Zobel and André Thess (German Aerospace Centre)

#### **Thermal Energy Storage I**

- 12:00 2-6** ENERGY STORAGE IN FLUIDIZED BED  
Zhihong Liu<sup>1</sup>, Atsushi Ishikawa<sup>1</sup>, Qun Chen<sup>2</sup> and Hai Zhang<sup>2</sup> ( <sup>1</sup>IHI Corporation and <sup>2</sup>Tsinghua University)
- 12:30 2-7** EXPERIMENTAL AND NUMERICAL SIMULATION OF MELTING PROCESS OF PHASE CHANGE MATERIAL FOR LATENT HEAT STORAGE SYSTEM DESIGN IN CONCENTRATED SOLAR POWER  
Nobuyuki Gokon, Yukiko Saito, Selvan Bellan, Tsuyoshi Hatamachi, Tatsuya Kodama and Hyun-seok Cho (Niigata University)

12:45 Lunch

## Part 1

### Woody Biomass and PV-Storage Systems in Decentralized Supply Systems 1

**13:45 1-17** WOODY BIOMASS ENERGY AS REGIONAL REVITALIZATION AND ITS SOCIAL ACCEPTANCE

Tomohiro Tabata<sup>1</sup>, Yuka Nakahara<sup>2</sup> and Tomoko Ohno<sup>1</sup> ( <sup>1</sup>Kobe University and <sup>2</sup>Japan Ministry of Economy, Trade and Industry)

**14:15 1-18** SCENARIO ANALYSIS OF DECENTRALIZED ENERGY SYSTEMS CONSIDERING SOCIOECONOMIC AND SOCIOTECHNICAL ASPECTS

Yasunori Kikuchi<sup>1</sup>, Yuko Oshita<sup>2</sup> and Yasuhiro Fukushima<sup>3</sup> ( <sup>1</sup>The University of Tokyo, <sup>2</sup>Kobe University and <sup>3</sup>Tohoku University)

**14:45 1-19** HOW ECONOMIC INCENTIVES SHAPE THE USE OF TECHNOLOGIES – TWO EXAMPLES TO EVALUATE THE EFFECT

Marc Deissenroth<sup>1</sup>, Christoph Schimeczek<sup>1</sup>, Matthias Reeg<sup>1,2</sup>, Martin Klein<sup>1</sup>, Kristina Nienhaus<sup>1</sup> and Ahmad Ziade<sup>1</sup> ( <sup>1</sup>German Aerospace Center and <sup>2</sup>Wuppertal Institute for Climate, Environment, Energy)

**15:15 1-20** RENEWABLE ENERGY AND ENERGY EFFICIENCY FOR JAPANESE RE100 UNIVERSITIES

Eckhard Hitzer (International Christian University)

15:45 Break

### Methodological Advancements in Large-scale Energy Systems Modelling

**16:15 1-21** WHAT ARE THE TECHNICAL PATHWAYS TO AND ECONOMIC ISSUES WITH DECARBONIZING ELECTRICITY PRODUCTION?

Ramteen Sioshansi<sup>1</sup>, Yixian Liu<sup>1</sup>, Luigi Boffino<sup>2</sup>, Antonio J. Conejo<sup>1</sup> and Giorgia Oggioni<sup>3</sup> ( <sup>1</sup>The Ohio State University, <sup>2</sup>University of Bergamo and <sup>3</sup>University of Brescia)

**16:45 1-22** MODEL AND SOLVER BASED SPEED-UP STRATEGIES FOR OPTIMIZING LINEAR ENERGY SYSTEM MODELS

Manuel Wetzel<sup>1</sup>, Karl-Kiên Cao<sup>1</sup>, Daniel Rehfeldt<sup>2</sup>, Frederik Fiand<sup>3</sup>, Kai von Krbek<sup>1</sup> and Hans Christian Gils<sup>1</sup> ( <sup>1</sup>German Aerospace Centre, <sup>2</sup>Zuse Institute Berlin and <sup>3</sup>GAMS Software GmbH)

**17:15 1-23** Part 1 Closing

## October 19 (Fri.), 2018

## Part 2

### Chemical Heat Pumps

**09:00 2-8** THERMAL DRIVING DEMONSTRATION OF Li4SiO4/CO2/ZEOLITE CHEMICAL HEAT PUMP  
Seon Tae Kim, Hiroki Takasu and Yukitaka Kato (Tokyo Institute of Technology)

**09:30 2-9** DESIGN OF NEW ENERGY HARVESTING TECHNOLOGY FROM LOW TEMPERATURE WASTE HEAT USING MAGNETIC PHASE TRANSITION

Yasuki Kansha and Masanori Ishizuka (The University of Tokyo)

**10:00 2-10** LOW-TEMPERATURE REFORMING PROCESS WITH METAL-OXIDE NANOCATALYSTS SYNTHESIZED BY SUPERCRITICAL HYDROTHERMAL METHOD

Takaaki Tomai<sup>1</sup>, Gimyeong Seong<sup>2</sup>, Akira Yoko<sup>3</sup> and Tadafumi Adschiri<sup>3</sup> ( <sup>1</sup>IMRAM, Tohoku University, <sup>2</sup>NICHE, Tohoku University and <sup>3</sup>WPI-AIMR, Tohoku University)

10:30 Break

## Heat Transfer & Thermal Energy Storage (TES)

**10:45 2-11** HEAT TRANSFER ENHANCEMENT OF REACTOR BED FOR THERMOCHEMICAL ENERGY STORAGE USING COMPOSITE REACTANTS OF CALCIUM CHLORIDE COMBINED WITH FUNCTIONAL CARBON MATERIALS

Keiko Fujioka (Functional Fluids Ltd.)

**11:15 2-12** DEVELOPMENT OF PERFORMANCE ANALYSIS CODE FOR HEAT TRANSFER LOOP SYSTEM

Motoyasu Kinoshita<sup>1</sup>, Indarta Kuncoro Aji<sup>2</sup>, Fumihiro Chiba<sup>1</sup>, Shou Mori<sup>3</sup>, Kazuki Morita<sup>4</sup> and Taizo Shibuya<sup>1</sup> ( <sup>1</sup>Molten Salt Laboratory Inc., <sup>2</sup>The University of Electro Communications, <sup>3</sup>University of Agriculture and Technology and <sup>4</sup>Keio University)

**11:45 2-13** DEVELOPMENT OF HIGH-TEMPERATURE LATENT HEAT STORAGE MEDIA AND ITS APPLICATIONS

Takahiro Nomura, Hiroki Sakai, Yuta Hasegawa, Miki Haga, Nan Sheng and Tomohiro Akiyama (Hokkaido University)

**12:15 2-14** HIGH PERFORMANCE LATENT HEAT STORAGE SYSTEM BY SCRAPING SOLIDIFIED PCM LAYER

Nobuhiro Maruoka<sup>1</sup>, Taichi Tsutsumi<sup>2</sup>, Tomoya Kanai<sup>1</sup> and Hiroshi Nogami<sup>1</sup> ( <sup>1</sup>Tohoku University and <sup>2</sup>JFE Bars & Shapes Corporation)

12:45 Lunch

## Rotating Heater

**13:45 2-15** CONTROL OF INDUCTION MACHINE WITH FLYWHEEL FOR THERMAL ENERGY AND ELECTRIC POWER STORAGE SYSTEM

Taku Osawa<sup>1</sup>, Yushi Miura<sup>1</sup>, Toshifumi Ise<sup>1</sup> and Toru Okazaki<sup>2</sup> ( <sup>1</sup>Osaka University and <sup>2</sup>The Institute of Applied Energy)

**14:15 2-16** ROTATING INDUCTION TYPE ELECTRIC POWER AND HEAT GENERATOR: LOADED CHARACTERISTICS AND CONTROL STRATEGY

Taketsune Nakamura<sup>1</sup>, Fuat Kucuk<sup>1</sup> and Toru Okazaki<sup>2</sup> ( <sup>1</sup>Kyoto University and <sup>2</sup>The Institute of Applied Energy)

## Cutting Edge Technologies and TES II

**14:45 2-17** LASER BASED MAINTENANCE TECHNOLOGIES FOR A THERMAL STORAGE POWER PLANT

Akihiko Nishimura<sup>1,2</sup> and Toru Okazaki<sup>3</sup> ( <sup>1</sup>Japan Atomic Energy Agency, <sup>2</sup>University of Fukui and <sup>3</sup>The Institute of Applied Energy)

**15:15 2-18** DEVELOPMENT OF PELLETIZED MATERIAL FOR THE THERMOCHEMICAL ENERGY STORAGE USING A CALCIUM OXIDE/WATER REACTION SYSTEM

Shigehiko Funayama, Hiroki Takasu and Yukitaka Kato (Tokyo Institute of Technology)

**15:45 2-19** CARBON NANOTUBE-BASE SELF-SUPPORTING ELECTRODES FOR NEXT GENERATION RECHARGEABLE BATTERIES

Kei Hasegawa, Takayuki Kowase, Keisuke Hori and Suguru Noda (Waseda University)

16:00 Break

- 16:30**    **2-20**    THERMAL IMAGING TECHNIQUE APPLIED TO THE HIGH TEMPERATURE ENERGY MATERIALS  
Junko Morikawa (Tokyo Institute of technology)
- 17:00**    **2-21**    DESIGNING AND CHARACTERIZATION OF CALCIUM-BASED HYDROGEN OCCLUDING ALLOYS FOR THERMAL ENERGY STORAGE  
Nobuyuki Nishimiya, Yuta Suzuki, Takehiro Kaneko, Yoshiyuki Kojima and Takeshi Toyama (Nihon University)
- 17:30**    **2-22**    DEVELOPMENT AND PROTOTYPE TESTING OF THERMAL ENERGY STORAGE SYSTEM AND THERMOCHEMICAL FLUIDIZED BED RECEIVER/REACTOR FOR UTILIZATION OF CONCENTRATED SOLAR RADIATION: RESEARCH ACTIVITIES IN NIIGATA UNIVERSITY  
Tatsuya Kodama, Selvan Bellan, Koji Matsubara, Nobuyuki Gokon and Hyun-Seok Cho (Niigata University)
- 18:00**    **2-23**    Closing