The 5th RD20 Conference

Conference of leading research institutes from G20 members
focusing on clean energy technologies

Date: October 4–6, 2023
Venue：Hotel Hamatsu (3-18 Toramaru-cho, Koriyama-City, Fukushima Pref.)
(https://www.hotel-hamatsu.co.jp/)
Organizer: AIST (The National Institute of Advanced Industrial Science and Technology)
Co-organizers:
Ministry of Education, Culture, Sports, Science and Technology (MEXT)
Ministry of Economy, Trade and Industry (METI)
Ministry of the Environment (MOE)
New Energy and Industrial Technology Development Organization (NEDO)

Launched in 2019, the RD20 is a framework for international research and development aiming to strengthen international collaboration and promote innovation by leading research institutes in G20 countries and regions that develop the world's most advanced technologies for achieving carbon neutrality. RD20 provides opportunities for participants to exchange R&D activities, experiences, and best practices related to clean energy technologies across countries and regions, as well as to explore the potential for international joint research. It also serves to deepen and develop new partnerships among relevant industry, academia, and government stakeholders.

The 5th RD20 conference will be held in Fukushima, the site of Japan's renewable energy frontier. Several international actions, including task forces on PV and hydrogen, summer school in France, and the Gigaton Hydrogen Workshop have been already launched. Leaders and experts of the institutes from G20 members will gather to accelerate collaboration and release the outcome all over the world.

Session	Date	Time (in Japan)	Attendance
Technical Session	Oct. 4	8:50 – 18:00	On-site and online
Leaders Session	Oct. 5	8:00 – 17:00	On-site and online
Panel Exhibition	Oct. 4–5	10:00 – 18:00	On-site
Site Visit	Oct. 6	8:30 – 17:00	*Invitation-only event

i) Technical Session, 4th Wed October – On- site and Online

Time	Content
	Plenary Session(open) **Theme:** High-level talk that frames one of the technical sessions **Moderator:** Dr. William Tumas (NREL, US)
8:50-9:00	Introduction: RD20 goals, recommendations, progress, future plans Dr. Haruhiko Obara (AIST, Japan)
9:00-9:25	Global perspective of H2, challenges/opportunities, applications of H2 for decarbonization of energy sectors Prof. Dr. Christopher Hebling (Fraunhofer ISE, Germany)
9:25-9:50	Large-scale PV deployment, challenges and opportunities (TW workshop overview and other concepts), bringing circularity to PV Dr. Silvana Oviatt (NREL, US)
9:50-10:15	CCU in the Context of Hydrogen Storage and Synthetic Fuels Dr. Florian Nestler (Fraunhofer ISE, Germany)
10:15-10:45	Panel Discussion among the speakers
10:45-11:00	***Coffee Break***
11:00-11:15	Activity Report of PV Task Group (TG1-1) Dr. Harald Muellejans (JRC, EU)
11:15-11:30	Presentation from the task forces (make the task force important —short talks from task force leader) H_2 LCA Dr. Amgad Elgowainy (ANL, US)
11:30-12:00	Panel discussion on RD20 collaborations, status and future Advisory Board Members
12:00-13:30	***Lunch Break***

	TS 1: Applications and impacts of H2 for decarbonization of energy sectors and for power to X Moderator Dr. Florence Lefebvre-Joud (CEA-Liten, France)	TS 2: LCA and environmental impacts on large-scale deployment of PV Moderator Dr. Christian Thiel (JRC, EU)	TS 3: CCU — with a focus on CCU value proposition and integration themes Moderator Dr. Dietmar Tourbier (CSIRO, Australia)
13:30-13:55	Overview – Decarbonization by Sectors Dr. Florence Lefebvre-Joud (CEA-Liten, France)	Overview Dr. Michio Kondo (AIST, Japan)	Opportunities and Challenges for Integrating CO2 Capture and Conversion Dr. Joshua Schaidle (NREL, US)
13:55-14:20	Outbrief from Gigaton H_2 Workshop Dr. Bryan Pivovar (NREL, US)	Environmental assessment of large-scale photovoltaic deployment Dr. Myriam Merad (CNRS-Paris Dauphine, France)	A bottom-up levelized cost of CO2 abatement (LCCA) framework for Carbon Capture and Utilization (CCU) - Case studies and applications for R&D and policy gaps. Dr. Farid Bensebaa (NRC, Canada)
14:20-14:45	Reversible Solid Oxide Cells: A Flexible Energy Device for Both Power Generation and Hydrogen Production (* NEDO Program) Dr. Kazunari Sasaki (Kyushu University, Japan)	Chemical risk assessment on photovoltaic (PV) panel and a case study of CdTe PV panels Dr. Kyoko Ono (AIST, Japan)	High-Temperature Solar Thermal Usage for Thermochemical Carbon Dioxide Splitting and Its Application to CCU (* NEDO Program) Dr. Koji Matsubara (Niigata University, Japan)
14:45-15:10	Current Status of Green Ammonia Production and Utilization Research in South Korea Dr. Hyung Chul Yoon (KIER, Korea)	Environmental assessment due to high penetration of PV Dr. Leandro Michels (UFSM, Brazil)	An overview of the CSIR's research on biogenic carbon capture and utilisation to low-carbon, sustainable hydrogen Mr. Zama Duma (CSIR, South Africa)
15:10-15:35	Smart Sector Integration; Hydrogen Valley Dr. Giorgio Graditi (ENEA, Italy)	India solar missions and impacts as well as aspects of large-scale PV deployment Dr. Anil Kottantharayil (IITB, India)	CCU in the Context of Hydrogen Storage and Synthetic Fuels Dr. Florian Nestler (Fraunhofer ISE, Germany)
15:35-16:00	Decarbonizing Shipping Industries Dr. Vibha Dhawan (TERI, India)	Overview of the potential and challenges for Agrivoltaics Mr. Anatoli Chatzipanagi (JRC, EU)	CCU technology for the production of e-fuels and e-chemicals Dr. Donghyun Chun (KIER, Korea)

16:00-16:25	Techno-economic prefeasibility analysis for zero-carbon maritime fuel at 2 South African ports Mr. Thomas Roos (CSIR, South Africa)	French-Japanese International Collaboration in R&D of Next Generation Solar Cells and Beyond (* NEDO Program) Dr. Takaya Kubo (The University of Tokyo, Japan)	MI CDR (tentative) Dr. Joan Ramón Morante Lleonart (IREC, Spain) (online)
16:25-17:00	***Coffee Break***		
17:00-18:00	TS1: Wrap-up session (closed) Panel discussion—focus on international collaboration opportunities, RD20 future actions Summary of potential recommendations/actions Speakers and leader	TS2: Wrap-up session (closed) Panel discussion—focus on international collaboration opportunities, RD20 future actions Summary of potential recommendations/actions Speakers and leader	TS3: Wrap-up session (closed) Panel discussion—focus on international collaboration opportunities, RD20 future actions Summary of potential recommendations/actions Speakers and leader

* NEDO Research and Development Program for Promoting Innovative Clean Energy Technologies Through International Collaboration

As of 11th Sept

(Program time and contents are subject to change.)

ii) Leaders Session, 5th Thu October – On-site and Online

Time	Theme, Speaker
8:00-12:00	**Leaders Session (closed)** **RD20 members and invited persons only**
13:30-18:00	**Leaders Session (open)**
13:30-13:45	Welcome address: METI, RD20 Chair
13:45-14:45	Keynote speech - Akira Yoshino (AIST, Japan) - TBD
14:00-17:00	Round-table Discussion - Overview of the morning session - Discussion for actionizing the Leaders Recommendations

As of 11th Sept

(Program time and contents are subject to change.)

iii) Panel Exhibition（Hotel Hamatsu Lobby）

Industries

	Exhibitor	Title
1	Hitachi, Ltd.	Building Flagship Models Toward the Realization of a Carbon Neutral Society
2	SHIMIZU CORPORATION	The world's most advanced approach to building carbon neutrality: "Hydro Q-BiC®" hydrogen utilization system installed in an actual building
3	TOYOTA MOTOR CORPORATION	Toyota's efforts toward achieving carbon neutrality
4	Mitsubishi Heavy Industries, Ltd.	"MISSION NET ZERO" Mitsubishi Heavy Industries Group's answer to achieving carbon neutrality
5	SEKISUI CHEMICAL CO., LTD.	The progress of Sekisui Chemical Company toward implementation of Perovskite solar cell.
6	CHIYODA KOGYO CO., LTD SANKEI Co., Ltd. & AIST	Wood sustainable composites realizing negative CO_2 emissions
7	AISAN INDUSTRY CO., LTD & AIST	High-quality and efficient forming technology by semi-solid high-pressure die-casting
8	ISHIHARA SANGYO KAISHA, LTD & AIST	New Heat Storage Material 「HASClay®」, Energy saving application using high-performance adsorbent 「HASClay®」
9	SANNO Co., Ltd.	Electrodeposition Hydrogen Permeable Membrane

Local Governments

	Exhibitor	Title
1	Fukushima Prefecture	Renewable energy-related facilities in the Prefecture, To the Future FUKUSHIMA, State of hydrogen popularization, Shared powered line improvement project (tentative), Initiatives to promote and integrate renewable energy and hydrogen related industries (tentative)
2	Koriyama City (1) Frontier Laboratories Ltd. (2, 3) Koriyama City	(1) A Simple, Effective Solution for Analyzing Microplastics Using Pyrolysis-GC/MS (2) Koriyama's Climate Change Initiatives (3) Koriyama's Industrial Innovation

Researchers

	Exhibitor	Title
1	Dr. Florian Nestler (Fraunhofer ISE, Germany)	Dimethyl Ether (DME) via Dynamic Methanol Synthesis: One Concept for Global Point-to-Point H_2 Carriers
2	Dr. Huyen N Dinh (NREL, US)	Clean Hydrogen Production – A Consortium Approach
3	Dr. Alex Badgett (NREL, US)	Opportunities and Implications for Low-Cost Hydrogen Production from Water Electrolysis in a Decarbonizing Power Sector
4	Dr. Josh Schaidle (NREL, US)	Electrons to Molecules
5	Dr. Jason Paterson (NZTC, UK)	Net Zero Technology Centre – Technology Driving Transition
6	Dr. Kenji Otani (AIST-FREA)	Energy Network Team(outline)
7	Dr. Tetsuya Nanba (AIST-FREA)	Hydrogen Energy Team (outline)
8	Dr. Tetsuhiko Maeda (AIST-FREA)	Hydrogen Carrier Utilization Team (outline)
9	Dr. Tetsuya Kogaki (AIST-FREA)	Wind Energy Team (outline)
10	Dr. Takuya Matsui (AIST-FREA)	Photovoltaic Device Team (outline)
11	Dr. Katsuto Tanahashi (AIST-FREA)	Photovoltaic Module and Application Team (outline)
12	Dr. Takashi Oozeki (AIST-FREA)	Photovoltaic System and Application Team (outline)
13	Dr. Takurou Murakami (AIST-GZR), Dr. Masahiro Yoshita (AIST-FREA)	Development of Perovskite Solar Cells: -Materials and Fabrication Technology, Performance Characterization, and Standardization-
14	Dr. Akito Ozawa, Dr. Yuki Kudo (AIST-GZR)	Scenario Analysis for Achieving Carbon Neutrality in Japan by 2050
15	Dr. Hideyuki Takagi (AIST-GZR)	Development of Synthetic Liquid Fuel Production Technology from CO_2
16	Dr. Kazuhiro Sayama (AIST-GZR)	Artificial Photosynthesis Technology for Economical Production of H_2 and Valuable Chemicals
17	Dr. Shinichirou Morimoto (AIST-GZR)	Evaluation of Carbon Capture and Utilization Technologies using AIST Assessment Tool
18	Dr. Shinichirou Morimoto, Mr. Atsushi Yamamoto (AIST-GZR)	Feasibility Study of Enhanced Mineralization Based on LCA/TEA Platform
19	Dr. Nishio Masahiro, Mr. Atsushi Yamamoto (AIST-GZR)	Tokyo Zero-emission Innovation Bay
20	Dr. Hiroaki Hatori (AIST-GZR)	GZR research activities

As of 11th Sept

(Contents are subject to change.)

Expected participating countries and regions

For registration and most up-to-date information on RD20 conference, please visit:
https://rd20.aist.go.jp/

Contact：RD20 Secretariat M-rd20secretariat-ml@aist.go.jp