

## EcoDesign 2021 Detailed Program

Notes

OS = Organized Session

[A1-1], [P1-1], etc.: Paper IDs in the proceedings

[E]: Included in the E-book published by Springer after the symposium

Presenting authors are marked with \*.

**Wednesday, December 1, 2021**

JST	UTC	
15:00-15:30	6:00-6:30	Opening Session
15:30-15:40	6:30-6:40	Short Break

**Wednesday, December 1, 2021**

JST	UTC	Room A	Room B	Room C	Room D
		[A1] OS: Sustainable Consumption and Production: Methods and Practices (1)  Chair: Kimita, Koji (The University of Tokyo, Japan)	[B1] Waste Management (1)  Chair: Kobayashi, Hideki (Osaka University, Japan)	[C1] Collaboration for Sustainable Innovation  Chair: Masui, Kejiro (National Institute of Advanced Industrial Science and Technology, Japan)	
		<b>[A1-1] Can rental platforms contribute to a more sustainable fashion industry? Evidence from the Canadian case</b> *Eri Amasawa (1), Taylor Brydges (2, 3), Claudia E Henninger (4) (1. The University of Tokyo, Japan, 2. Stockholm University, Sweden, 3. University of Technology Sydney, Australia, 4. The University of Manchester, UK)	<b>[B1-1] The Economic Benefits study for municipal solid waste treatment: A cost and revenue analysis in Ulaanbaatar city</b> *Delgermaa Gombojav (1), Toru Matsumoto (1. The University of Kitakyushu, Japan)	<b>[C1-1] Quantitative Analysis of Social Impact of New Businesses Developed in Yamagata Region</b> *Takashi Iwamoto (1), Yuya Kaga (2), Takaomi Nozaki (2) (1. Keio University, Japan, 2. Cube & Company, Japan)	
15:40-16:45	6:40-7:45	<b>[A1-2][E] Undertaking Scenario Analysis of the Diffusion of Car Sharing Services: A Case Study in Bangkok, Thailand</b> *Ryota Odagaki (1), Yusuke Kishita (1), Pongsun Bunditsakulchai (2), Saroch Boonsiripant (3), Yasushi Umeda (1) (1. The University of Tokyo, Japan, 2. Chulalongkorn University, Thailand, 3. Kasetsart University, Thailand)	<b>[B1-2][E] Identification of most affected impact categories of waste water-based biogas production and use</b> *Salma Chaouali (1), Akihiro Tokai (1), Leticia Sarmento dos Muchangos (1), Lisa Ito (1) (1. Osaka University, Japan)	<b>[C1-2][E] Thinking Model for Japanese Small and Medium-sized Enterprises Innovation Explicated by OntoIS</b> *Toshiaki Mitsui (1,2), Ryuzo Furukawa (1) (1. Tokyo City University, Japan, 2. Yamagata Research Institute of Technology, Japan)	
		<b>[A1-3] Workshop-Based Scenario Quantification for Sustainable Consumption and Production Using a Backcasting Approach</b> *Sota Onozuka (1), Yusuke Kishita (1), Mitsutaka Matsumoto (2), Michikazu Kojima (3), Yasushi Umeda (1) (1. The University of Tokyo, Japan, 2. National Institute of Advanced Industrial Science and Technology, Japan, 3. Economic Research Institute for ASEAN and East Asia, Japan)	<b>[B1-3][E] Evaluation of evolving waste management strategies in Addis Ababa city, Ethiopia: A life-cycle assessment approach</b> *Gemechu Beyene Mekonnen (1), Akihiro Tokai (1), Lisa Ito (1), Leticia Sarmento dos Muchangos (1) (1. Osaka University, Japan)	<b>[C1-3][E] Modeling local product development through multidisciplinary collaboration: A case study in Nagara, Chiba Prefecture in Japan</b> *Shota Tajima (1) (1. Chiba University, Japan)	
		<b>[A1-4] Palm Oil Biomass Wastes Management for Sustainable and Clean Production</b> *Ahmad Fariz Mohamed (1), Noor Azimah Darus (1) (1. Universiti Kebangsaan Malaysia, Malaysia)	<b>[B1-4][E] Plastic waste trade flows in the Southern African Region from 2016 to 2020</b> *Leticia dos Muchangos (1), Lisa Ito (1), Akihiro Tokai (1) (1. Osaka University, Japan)	<b>[C1-4] Cross-organizational collaboration for life cycle design oriented to sustainable value creation—a conceptual framework</b> *Rujing Wu (1), Jing Tao (2), Suiran Yu (1) (1. Shanghai Jiao Tong University, China, 2. Shanghai University, China)	
16:45-16:55	7:45-7:55	Short Break			

Wednesday, December 1, 2021

JST	UTC	Room A	Room B	Room C	Room D
16:55-18:00	7:55-9:00	[A2] OS: Sustainable Consumption and Production: Methods and Practices (2)	[B2] Waste Management (2)		[D2] Metrics for Circular Economy
		Chair: Kishita, Yusuke (The University of Tokyo, Japan)	Chair: Tokai, Akihiro (Osaka University, Japan)		Chair: Kondoh, Shinsuke (The University of Tokyo, Japan)
		<b>[A2-1][E] Design, evaluation, and acceptance of advanced energy efficient houses for Thailand</b> *Tomohiro Tasaki (1), Shotaro Kato (2), Hironori Souda (3,4), Taiji Imaizumi (4,5), Aya Yoshida (1), Panate Manomaivibool (6), Pattayaporn Unroj (6) (1. National Institute for Environmental Studies, Japan, 2. SHTRKT, Japan, 3. Wellnest Home, Japan, 4. Japan Energy Pass Association, Japan, 5. R Design, Japan, 6. Mae Fah Luang University, Thailand)	<b>[B2-1] A study on the analysis of plastic wastes for the recycling industry in Malaysia</b> *Ming Hui Tan (1), Meng Soon Chiong (1), Yoon-Young Chun (2), Kenichiro Tsukahara (2), Kiyotaka Tahara (2) (1. Universiti Teknologi Malaysia, Malaysia, 2. National Institute of Advanced Industrial Science and Technology, Japan)		<b>[D2-1][E] Evaluation of micro-level circularity indicators using agent-based modelling</b> *Megumi Niki (1), Tomomi Kito (2) (1. Tokyo Institute of Technology, Japan, 2. Waseda University, Japan)
		<b>[A2-2][E] Food Loss and Waste: Mixed analysis from the Circular Food Economy</b> *Sindy Dayana Rico Lugo (1), Koji Kimita (1), Nariaki Nishino (1) (1. The University of Tokyo, Japan)	<b>[B2-2][E] Comparative analysis of wastewater activated sludge recycling system in China: environmental and economic performances</b> *Jiawen Zhang (1), Toru Matsumoto (1), Zhiyi Liang (1) (1. The University of Kitakyushu, Japan)		<b>[D2-2] Evaluation of circularity for life cycle design: A case study of toner bottles</b> *Mariko Takii (1), Tsuyoshi Imamura (1), Hideo Sakurai (1), Yoshinori Kurosawa (1), Takumi Segawa (2), Yusuke Kishita (2), Yasushi Umeda (2) (1. Ricoh Co., Ltd., Japan, 2. The University of Tokyo, Japan)
		<b>[A2-3] Increased personal protective and Medical Equipment manufacturing to fight COVID-19: an egregious approach for the environment</b> *Damola Ikeoluwa Akano (1,3), Winifred Ijomah (1,2,3), James Windmill (1,2,3) (1. University of Strathclyde, U.K., 2. Scottish Institute for Remanufacturing, UK, 3. Strathclyde Remanufacturing Research Group, UK)	<b>[B2-3] Material Flow Analysis of Single-Use Plastic Waste in Thailand</b> *Viganda-Varabuntoonvit (1), Kultida Boonyarith (1), Panarin Pakornkarn (1), Kittikarn Sadudeethanakul (1), Yoon-Young Chun (2) (1. Kasetsart University, Thailand, 2. National Institute of Advanced Industrial Science and Technology, Japan)		<b>[D2-3] A mathematical model to evaluate reusable products' circularity towards optimising durability, collection rate, and reuse cycles</b> *Susumu Okumura (1) (1. University of Shiga Prefecture, Japan)
					<b>[D2-4] A guideline for using LCC when selecting and implementing circular measures</b> *Marianna Lena Kambanou (1), Tomohiko Sakao (1) (1. Linkoping University, Sweden)
18:00-18:30	9:00-9:30	Networking			

JST	UTC	Room A	Room B	Room C	Room D
		[A3] OS: Future Design for Socio-technical Innovation (1)	[B3] Recycling System Design	[C3] Remanufacturing (1)	[D3] Life Cycle Analysis (1)
		Chair: Uwasu, Michinori (Osaka University, Japan)	Chair: Kashiwakura, Shunsuke (Ritsumeikan University, Japan)	Chair: Inoue, Masato (Meiji University, Japan)	Chair: Ahmad Fariz Mohamed (Universiti Kebangsaan Malaysia, Malaysia)
		<b>[A3-1] Future Design and Socio-technical Innovation</b> *Keishi Hara (1) (1. Osaka University, Japan)	<b>[B3-1] Visioning the scale-up development of urban textile recycling based on eco-tech viability assessment - A case study of Shanghai, China</b> *Jing Tao (1), Suiran Yu (2) (1. Shanghai University, China, 2. Shanghai Jiao Tong University, China)	<b>[C3-1] Opportunities and challenges of additive manufacturing for enabling circular manufacturing</b> *Mitsutaka Matsumoto (1), Harumichi Sato (1), Naoko Sato (1), Hiroto Itagaki (1), Carla Susana A. Assua (2), Kristian Martinsen (2) (1. National Institute of Advanced Industrial Science and Technology, Japan, 2. Norwegian University of Science and Technology, Norway)	<b>[D3-1] Sustainable Consumption and Production: A Comparative LCA Study of Toothpaste Products</b> *Suphichaya Suppipat (1), Allen H. Hu (1), Lien T.K. Trinh (1), Chien-Hung Kuo (1), Lance Hongwei Huang (1) (1. National Taipei University of Technology, Taiwan)
18:30-19:35	9:30-10:35	<b>[A3-2] Toward Developing a Backcasting Framework: A Systematic Approach to Designing Sustainable Futures</b> *Yusuke Kishita (1), Mattias Höjer (2), Jaco Quist (3) (1. The University of Tokyo, Japan, 2. KTH Royal Institute of Technology, Sweden, 3. Delft University of Technology, Netherlands)	<b>[B3-2] Development of distributed recycling system for alkaline batteries by using microwave technology</b> *Shoki Kosai (1), Daiki Kurogi (1), Keita Kozaki (1), Eiji Yamasue (1) (1. Ritsumeikan University, Japan)	<b>[C3-2][E] State prediction and parts replacement of a manipulator based on assembly model</b> *Takahiro Tanaka (1), Hiroyuki Hiraoka (1) (1. Chuo University, Japan)	<b>[D3-2] Understanding the current status of life cycle inventory database in the Asian region</b> *Yoon-Young Chun (1), Kiyotaka Tahara (1), Kenichiro Tsukahara (1), Meng Soon Chiong (2), Viganda Varabuntoonvit (3), Chun-Youl Baek (4) (1. National Institute of Advanced Industrial Science and Technology, Japan, 2. Universiti Teknologi Malaysia, Malaysia, 3. Kasetsart University, Thailand, 4. Korea Institute of Industrial Technology, Korea)
		<b>[A3-3][E] Future Design Based Policy Making Card Game For High School Education</b> *Shohei Nakamura (1), Tsubasa Ogata (2), Kazuhito Wakamoto (1), Tetsusei Kurashiki (1) (1. Osaka University, Japan, 2. TEPCO Energy Partner, Incorporated, Japan)	<b>[B3-3] Understanding distributed recycling: Effects of consumer behaviors on environmental performance</b> *Masakuni Tsunezawa (1), Kohei Sugiyama (1), Kazuyuki Tasaka (1), Shinichi Fukushige (1,2) (1. KDDI Research, Japan, 2. Waseda University, Japan)	<b>[C3-3][E] Environmental evaluation of Toner Cartridge Remanufacturing</b> *Erik Sundin (1), Sasha Shabazi (2) (1. Linköping University, Sweden, 2. RISE Research Institutes of Sweden AB, Sweden)	<b>[D3-3][E] Environmental Impact Assessment of Tomato Consumption Using Life Cycle Assessment from Cultivation to Cooking</b> *Misaki Takemoto (1), Aoi Kubota (1), Kiyoshi Dowaki (1) (1. Tokyo University of Science, Japan)
		<b>[A3-4] Socio-techno-economic transition towards net-zero by 2050 in Kyoto</b> *Takuro Kobashi (1), Eric Zusman (2), Masaru Yarime (3,4), Yoko Kawai (5) (1. National Institute for Environmental Studies, Japan, 2. Institute for Global Environmental Strategies, Japan, 3. The Hong Kong University of Science and Technology, Hong Kong, 4. The University of Tokyo, Japan 5. Global Environment and Energy Policy of Kyoto City, Japan)	<b>[B3-4][E] Finding applications for secondary raw materials</b> *Mauricio Dwek (1), Claes Fredriksson (1) (1. Ansys, France)	<b>[C3-4][E] Artificial Intelligence for Process Control In Remanufacturing</b> *Chigozie Enyinna Nwankpa (1), Winifred I Ijomah (1), Anthony Gachagan (1) (1. University of Strathclyde, UK)	<b>[D3-4][E] The Life Cycle Assessment of Digital Professional Photography in Iran</b> Seyed Javad Zafarmand (1), *Sajad Zolfaghari Yadegarloo (1) (1. Shiraz University, Iran)
19:35-19:45	10:35-10:45	Short Break			

Wednesday, December 1, 2021

JST	UTC	Room A	Room B	Room C	Room D
19:45-20:50	10:45-11:50	[A4] OS: Future Design for Socio-technical Innovation (2)	[B4] Material Circularity	[C4] Remanufacturing (2)	[D4] Life Cycle Analysis (2)
		Chair: Hara Keishiro (Osaka University, Japan)	Chair: Ullah, AMM Sharif (Kitami Institute of Technology, Japan)	Chair: Sundin, Erik (Linköping University, Sweden)	Chair: Dowaki, Kiyoshi (Tokyo University of Science, Japan)
		<b>[A4-1] Utilization method and effect evaluation of systems thinking in Future Design workshops – Case studies of policy-making workshops in local governments</b> *Yutaka Nomaguchi (1), Ryotaro Senoo (1), Shinya Fukutomi (1), Keishiro Hara (1), Kikuo Fujita (1) (1. Osaka University, Japan)	<b>[B4-1] A study of life cycle simulation applying compromised decision-making mechanism</b> *Taro Kawaguchi (1), Shuhei Suzuki (2), Hidenori Murata (1), Hideki Kobayashi (1) (1. Osaka University, Japan, 2. Kubota, Japan)	<b>[C4-1] Optimal production strategy of manufacturing and remanufacturing mixed production systems considering environmental, economic and facility-stability</b> *Aya Ishigaki (1), Jundai Koketsu (1), Hiromasa Ijuin (2), Tetsuo Yamada (2) (1. Tokyo University of Science, Japan, 2. The University of Electro-Communications, Japan)	<b>[D4-1] Life cycle analysis of material efficiency strategies for Network goods</b> *Mikko Samuli Vajja (1), Anders S.G. Andrae (2) (1. Orange Labs Networks, France, 2. Huawei Technologies Sweden AB, Sweden)
		<b>[A4-2] A survey and experiment on Japanese perceptions and attitudes to time and the future</b> *Tomohiro Tasaki (1), Hide-Fumi Yokoo (2), Yasuko Kameyama (1), Keisuke Matsuhashi (1), Hideo Shiogama1, Ryo Tajima (1), Rintaro Yamaguchi (1) (1. National Institute for Environmental Studies, Japan, 2. Hitotsubashi University, Japan)	<b>[B4-2][E] Discussion on the Reuse of Suboptimal Food through the Perspective of Sustainable Food Circle</b> Jui Che Tu (1), *Ku Hsi Chu (1) (1. National Yunlin University of Science and Technology, Taiwan)	<b>[C4-2] Communication of (environmental) data in the electronics refurbishment sector: Survey in Germany, Japan, and Indonesia</b> *Christian Clemm (1), Mitsutaka Matsumoto (2), Shu-san Gan (3) (1. Fraunhofer Institute for Reliability and Microintegration IZM, Germany, 2. National Institute of Advanced Industrial Science and Technology, Japan, 3. Petra Christian University, Indonesia)	<b>[D4-2][E] Life cycle resource use of air conditioner from the perspective of total material requirement</b> *Keita Hamasuna (1), Shoki Kosai (1), Shunsuke Kashiwakura (1), Eiji Yamasue (1) (1. Ritsumeikan University, Japan)
20:50-21:00	11:50-12:00	<b>Discussion on Future Design</b>	<b>[B4-3][E] Digital product passports in circular economy – case battery passport</b> *Teuvo Uusitalo (1), Marjaana Karhu (1), Sami Majaniemi (1), Päivi Kivikytö-Reponen (1), Saija Vatanen (1), Jyri Hanski (1) (1. VTT Technical Research Centre of Finland Ltd., Finland)	<b>[C4-3][E] Environmental and Economical Design Problem of Upgrading and Remanufacturing Option Selection</b> Jeaho Han (1), *Hiromasa Ijuin (1), Tetsuo Yamada (1), Shuho Yamada (3), Masato Inoue (2) (1. The University of Electro-Communications, Japan, 2. Meiji University, Japan, 3. The University of Tokyo, Japan)	<b>[D4-3] The Economic and Environmental Evaluation of Food Delivery Packaging</b> *Wu-Hsun Chung (1), Yu-Chen Chen (1) (1. National Taiwan Ocean University, Taiwan)
			<b>[B4-4] AFrom Abacus and Sundial to 5G</b> Susanna Kallio (1), *Tom Okrasinski (1), Arjen Saleminck (1), Pia Tanskanen (1) (1. Nokia Oyj, Finland)		<b>[D4-4][E] Adapting Lifecycle Impact Assessment Methodology to Quantify New Product Design Risks</b> *Christian Enyoghasi (1,2), Fazleena Badurdeen (1,2) (1. University of Kentucky, USA, 2. Institute for Sustainable Manufacturing, USA)
20:50-21:00	11:50-12:00	Short Break			
21:00-21:50	12:00-12:50	Plenary Keynote 1: <b>Eco-design needs a Circular Ecosystem</b> (Webinar) <b>Intrachoto, Singh</b>   Associate Professor of Building Innovation, Architect and Design Principal of OSISU			

JST	UTC	Room A	Room B	Room C	Room D
		[A5] OS: Roadmapping for Sustainability	[B5] Recycling Technology	[C5] OS: Toward the development of a novel resources circulation of Lithium-ion batteries (1)	[D5] Sustainability Assessment (1)
		Chair: Hirose, Yuta (Advanced Institute of Industrial Technology, Japan)	Chair: Nakano, Katsuyuki (Ritsumeikan University, Japan)	Chair: Tokoro, Chiharu (Waseda University, Japan)	Chair: Suiran, Yu (Shanghai Jiao Tong University, China)
		<b>[A5-1] Initiating Roadmapping Implementation: Insights from IHI Corporation</b> *Yuta Hirose (1,2), Robert Phaal (1), Clare Farrukh (1), Nathasit Gerdri (3), Sungjoo Lee (4), Hiroto Yamaoka (5) (1. University of Cambridge, 2. Advanced Institute of Industrial Technology, Japan, 3. Mahidol University, Thailand, 4. Ajou University, Korea, 5. IHI Corporation, Japan)	<b>[B5-1][E] Machine Recognition of ICs in Recycling Process of Small-sized Electronics</b> *Zizhen Liu (1), Nozomu Mishima (1) (1. Akita University, Japan)	<b>[C5-1] Development of innovative separation technology to create a new resource circulation loop</b> *Chiharu Tokoro (1,2), Taketoshi Koita (1), Soowon Lim (1), Takao Namihira (3) (1. Waseda University, Japan, 2. The University of Tokyo, Japan, 3. Kumamoto University, Japan)	<b>[D5-1] A practical approach for developing product environmental performance indicators</b> Byunghee Choi (1), *Byungkwun Kang (1), Jiwon Yang (1), Yongchae Jung (1), Changgone Kim (1) (1. LG Display, Korea)
15:00-16:05	6:00-7:05	<b>[A5-2] The use of roadmap for sustainable growth under uncertainty: The case of Korean manufacturing firms</b> *Woojin Cho (1), Youngjung Geum (2), Sungjoo Lee (1) (1. Ajou University, Korea, 2. Seoul National University of Science and Technology, Korea)	<b>[B5-2] Recovery of precious metals from “Chlorine bypass powder” in cement production using organic aqua regia</b> *Kohei Komatsu (1), Tomohisa Yoshikawa (1), Yasuyuki Ishida (1), Keiichi Miura (1), Kazuki Uda (2), Akihiro Yoshimura Yoshimura (2), Yasunari Matsuno (2) (1. Taiheiyō Cement Corporation, Japan, 2. Chiba University, Japan)	<b>[C5-2] Life cycle thinking on recycling of lithium-ion batteries by high-voltage pulsed discharge</b> *Yasunori Kikuchi (1), Izuru Suwa (1), Aya Heiho (1), Yi Dou (1), Chiharu Tokoro (2,1) (1. The University of Tokyo, Japan, 2. Waseda University, Japan)	<b>[D5-2][E] GIS-Based Analysis of Energy Recovery Potential from Oil Palm Empty Fruit Bunch in Southern Thailand</b> *Linux Farungsang (1), Helmut Yabar (2) (1. Tokyo Institute of Technology, Japan, 2. University of Tsukuba, Japan)
		<b>[A5-3] Supporting roadmap design for a sustainable society: Achieving carbon neutrality in the automotive industry – a case study</b> *Takamitsu Hirota (1), Yusuke Kishita (1), Robert Phaal (2), Yasushi Umeda (1), Tatsuhiko Nakano (3), Toshiki Isogai (3), Hayato Tanaka (3) (1. The University of Tokyo, Japan, 2. University of Cambridge, UK, 3. DENSO Corporation, Japan)	<b>[B5-3] Chalcopyrite leaching in organic aqua regia and copper recovery by solvent extraction</b> *Shunya Fujisaki (1), Akihiro Yoshimura (1), Yasunari Matsuno (1) (1. Chiba University, Japan)	<b>[C5-3] Designing circular supply chain of lithium-ion battery involving multiple applications and multiple circulation paths for different product layers</b> *Yasuhiro Fukushima (1), Jingwei Zhou (1), Hajime Ohno (1) (1. Tohoku University, Japan)	<b>[D5-3][E] Techno-economic assessment of recycling obsolete two-wheelers in ASEAN : the case of Myanmar and Cambodia</b> *Genya Murakami (1), Shoki Kosai (1), Shunsuke Kashiwakura1, Eiji Yamasue (1) (1. Ritsumeikan University, Japan)
		<b>[A5-4] Identifying the Potential for Circular Economy Development from the Perspectives of Developing Economies: Using Patent and Bibliometric Analysis</b> *Nathasit Gerdri (1), Pard Teekasap (2) (1. Mahidol University, Thailand, 2. Stamford International University, Thailand)	<b>[B5-4][E] Silver Recovery from Spent Photovoltaic Panel Sheets using Electrical Wire Explosion</b> *Yuto Imaizumi (1), Soowon Lim (1), Taketoshi Koita (1), Yutaro Takaya (3,1), Takao Namihira (2), Chiharu Tokoro (3,1) (1. Waseda University, Japan, 2. Kumamoto University, Japan, 3. The University of Tokyo, Japan)		<b>[D5-4] Assessing the spatiotemporal dynamics of environmental sustainability in China</b> *Michinori Uwasu (1), Keishiro Hara (1), Masashi Kuroda (2), Ji Han (3) (1. Osaka University, Japan, 2. Tokoha University, Japan, 3. East China Normal University, China)
16:05-16:15	7:05-7:15	Short Break			

Thursday, December 2, 2021

JST	UTC	Room A	Room B	Room C	Room D
16:15-17:20	7:15-8:20		[B6] Energy System Design	[C6] OS: Toward the development of a novel resources circulation of Lithium-ion batteries (2)	[D6] Sustainability Assessment (2)
			Chair: Mizuno, Yuji (The Institute of Applied Energy, Japan)	Chair: Fukushima, Yasuhiro (Tohoku University, Japan)	Chair: Tokimatsu, Koji (Tokyo Institute of Technology, Japan)
			<b>[B6-1][E] Optimal Cooling Strategy for Energy Management using Multi-Temperature Acquisition Points in a Protected Cropping Facility</b> Premaratne Samaranyake (1), Chelsea Maier (1), Sachin Chavan (1), Weiguang Liang (1), Zhonghua Chen (1), *Yi-Chen Lan (1), David Tissue (1) (1. Western Sydney University, Australia)	<b>[C6-1][E] Procedure Model to support the Recycling-oriented Design of Lithium-Ion Batteries for Electric Vehicles</b> *Filip Vysoudil (1), Sönke Hansen (1), Mark Mennenga (1), Maho Fukuda (3), Gregor Ohnemüller (2), Tom Rüter (2), Dietrich Goers (3), Jan Koller (2), Kristian Nikolowski (3), Bernd Rosemann (2), Mareike Wolter (3), Michael Danzer (2), Frank Döpfer (2), Christoph Herrmann (1), Thomas Vietor (1) (1. Technical University of Brunswick, Germany, 2. University of Bayreuth, Germany, 3. Fraunhofer Institute for Ceramic Technologies and Systems, Germany)	<b>[D6-1] Government green procurement: Introducing a framework to assess the environmental performance</b> *Navarani Vejaratnam (1), Zeeda Fatimah Mohamad (1), Santha Chenayah (1) (1. University of Malaya, Malaysia)
			<b>[B6-2][E] Renewable Energy System in the Off-grid Communities: The Systems' Characteristics and Storage Technologies</b> *Andante Hadi Pandiyaswargo (1), Hiroshi Onoda (1) (1. Waseda University, Japan)	<b>[C6-2] Simulation-based Flow Management for Circular Manufacturing of Lithium Ion Battery</b> *Shinichi Fukushige (1), Keito Asai (1), Shozo Takata (1), Chiharu Tokoro (1, 2) (1. Waseda University, Japan, The University of Tokyo, Japan)	<b>[D6-2][E] Application of disability adjusted life years in risk assessment for total human mercury exposure in China and Japan - a meta-analysis</b> *Zhongyu Xu (1), Leticia Sarmientos Muchangos (1), Lisa Ito (1), Akihiro Tokai (1) (1. Osaka University, Japan)
			<b>[B6-3][E] Energy-Saving Performance for Cooling System by Snow Storage in Niigata, Japan</b> Yutaro Shimada (1), *Mako Mizuno (1), Koji Tokimatsu (1) (1. Tokyo Institute of Technology, Japan)		<b>[D6-3] Elucidating Energy Consumption During Jute-Fiber-to-Yarn Production</b> *Sweety Shahinur (1), Sharifu Ura (2), Mahbub Hasan (3), Sarmin Akhter (1), Julfikar Haider (4) (1. Bangladesh Jute Research Institute, Bangladesh, 2. Kitami Institute of Technology, Japan, 3. Bangladesh University of Engineering and Technology, Bangladesh, 4. Manchester Metropolitan University, UK)
		<b>[B6-4][E] Price – based demand response programs considering fixed and dynamic price elasticity matrix (PEM) of demand in the wholesale market in Japan</b> *Ladan Malehmirchegini (1), Hooman Farzaneh (1) (1. Kyushu University, Japan)		<b>[D6-4] The Effect of Sustainable Design Strategies on Resource Consumption – Home Laundry Activities in Indonesia</b> *Achmad Yahya Teguh Panuju (1), Martinus Martinus (1), Akhmad Rizal (1), Hideki Kobayashi (2) (1. Universitas Lampung, Indonesia, 2. Osaka University, Japan)	
17:20-17:30	8:20-8:30	Short Break			
17:30-18:30	8:30-9:30	Plenary Keynote 2: <b>Earth as One</b> <i>Ando, Tadao</i>   Emeritus Professor, The University of Tokyo / CEO, Tadao Ando Architect & Associates			
18:30-18:40	9:30-9:40	Short Break			
18:40-19:30	9:40-10:30	Plenary Keynote 3: <b>Rethinking assembly systems and their business model in a circular economy perspective</b> <i>Tolio, Tullio</i>   Professor of Manufacturing and Production Systems at Politecnico di Milano			
19:30-20:40	10:30-11:40	Poster Session			

Thursday, December 2, 2021

JST	UTC	Room A	Room B	Room C	Room D
		[A7] Strategies for Carbon Neutrality	[B7] Sustainable Transportation	[C7] OS: Medical Devices Reprocessing	[D7] Sustainability Assessment (3)
		Chair: Nissen, Nils F. (Fraunhofer IZM, Germany)	Chair: Hiraoka, Hiroyuki (Chuo University, Japan)	Workshop Lead: Damola Ikeoluwa Akano (University of Strathclyde, UK)	Chair: Yamasue, Eiji (Ritsumeikan University, Japan)
20:40-21:45	11:40-12:45	<p><b>[A7-1][E] Estimation of Greenhouse Gas Emissions from Wastewater Treatment in Ulaanbaatar and a Potential Approach for Emission Reductions</b></p> <p>*Nandintsetseg Nyam-Osor (1,2), Sandelger Dorilgjav (3), Amgalan Magsar (4), Erdenesukh Sumiya (3), Tegshjargal Bumtsend (5), Altanbold Erdenebold (3), Toru Matsumoto (4)</p> <p>(1. The National University of Mongolia, Mongolia, 2. Mongolian Academy of Sciences, Mongolia, 3. The National University of Mongolia, Mongolia, 4. The University of Kitakyushu, Japan, 5. Climate Change Project Implementing Unit under the Ministry of Environment and Tourism of Mongolia, Mongolia)</p>	<p><b>[B7-1][E] Environmental, health, and economic co-benefits assessment of the electrification of public transport in Delhi (India)</b></p> <p>*Tavoos Hassan Bhat (1), Hooman Farzaneh (1)</p> <p>(1. Kyushu University, Japan)</p>	<p><b>[C7] Workshop</b></p> <p>The workshop will examine medical devices reprocessing (which include remanufacturing, refurbishment, repair and recycling) focusing on customer perspectives. It will explore decision-making and customer acceptance in medical devices reprocessing. Its aim is to enlighten participants on customer factors, requirements and considerations (related to decision making in medical devices reprocessing) and equip them with tools to optimise their decision-making thereby improving the acceptability of their products. The workshop activities will include presentations, brainstorming and discussion.</p>	<p><b>[D7-1][E] Resource efficiency quantification of a long-life product considering service activities through lifecycle</b></p> <p>*Nozomu Mishima (1), Zhenxing Zhang (1)</p> <p>(1. Akita University, Japan)</p>
		<p><b>[A7-2][E] Consideration of CO2 emission reduction potential by utilizing recycled automobile parts in China</b></p> <p>*Sosho Kitajima (1), Hiroshi Onoda (1)</p> <p>(1. Waseda University, Japan)</p>	<p><b>[B7-2][E] A scenario analysis of transportation system in Vietnam based on life cycle simulation</b></p> <p>*Ryota Tanaka (1), Hidenori Murata (1), Hideki Kobayashi (1)</p> <p>(1. Osaka University, Japan)</p>		<p><b>[D7-2] Environmental Impact Assessment of PEM fuel cells for stationary applications reflecting degradation models</b></p> <p>*Shota Tochigi (1), Ryuta Nagado (1), Kiyoshi Dowaki (1)</p> <p>(1. Tokyo University of Science, Japan)</p>
		<p><b>[A7-3] Total material requirement of crude steel production toward CO2 emission control in 2050</b></p> <p>*Shunsuke Kashiwakura (1), Eiji Yamasue (1)</p> <p>(1. Ritsumeikan University, Japan)</p>	<p><b>[B7-3] Life Cycle Carbon Emission Benefits of Shared Electric Autonomous Vehicles</b></p> <p>*Hyung Chul Kim (1), Timothy J. Wallington (1)</p> <p>(1. Ford Motor Company, USA)</p>		<p><b>[D7-3][E] Smartphone App Design for Product Use Sustainability Evaluation</b></p> <p>*Matthew Russell (1), Peter Hong (1), Luke Blakely (1), Mark Kirkham (1), Peng Wang (1), Fazleena Badurdeen (1)</p> <p>(1. University of Kentucky, USA)</p>
		<p><b>[A7-4] Carbon neutrality in the EU and Japan by 2050 - What is the role of services?</b></p> <p>*Patrik Strom (1)</p> <p>(1. Stockholm School of Economics, Sweden)</p>			



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JST	UTC	Room A	Room B	Room C	Room D	
		[A8] Sustainable Society (1)	[B8] OS: The Energy-X-Nexus for EcoDesign in Socio-Technical systems	[C8] Sustainable Product and Service Design (1)		
		Chair: Yabar, Helmut (University of Tsukuba, Japan)	Chair: McLellan, Benjamin C. (Kyoto University, Japan)	Chair: Mishima, Nozomu (Akita University, Japan)		
		<b>[A8-1] Toward Developing Scenario Design Methodology: Analysis and Typology of Scenario Practice</b> *Toshiki Kusaka (1), Yusuke Kishita (1), Yuji Mizuno (2), Yasushi Umeda (1) (1. The University of Tokyo, Japan, 2. The Institute of Applied Energy, Japan)	<b>[B8-1] The Energy-Mineral-Nexus and Implications for Ecodesign</b> *Benjamin Craig McLellan (1) (1. Kyoto University, Japan)	<b>[C8-1] An exploration in digital reading of Ainu textile patterns</b> *Xanat Vargas Meza (1), Shexin Zhang (1), Yoichi Ochiai (1) (1. The University of Tsukuba, Japan)		
		<b>[A8-2] Assessment methodology for sustainable community in Japanese rural regions: a case study of Takashima, Shiga</b> *Michinori Uwasu (1), Michinori Kimura (2), Asako Iwami (3), Terukazu Kumazawa (4) (1. Osaka University, Japan, 2. Lake Biwa Environmental Research Institute, Japan, 3. Prefectural University of Kumamoto, Japan, 4. Research Institute for Humanity and Nature, Japan)	<b>[B8-2] The Energy-Infrastructure-Nexus: Hydrogen Penetration Potential and Infrastructure Issues for the USA</b> *Andrew Chapman (1), Rhea Bridgeland (3), Benjamin McLellan (2) (1. Kyushu University, Japan, 2. Kyoto University, Japan, 3. University of Illinois at Urbana Champaign, USA)	<b>[C8-2] Development of a fuel cell assisted bicycle with a metal alloy cartridge on the basis of a physical model</b> *Emi Hosobuchi1, Shan Miao (1), Junnosuke Shimogawa (1), Daisuke Hara (1), Noboru Katayama (1), Kiyoshi Dowaki (1) (1. Tokyo University of Science, Japan)		
15:00-16:05	6:00-7:05	<b>[A8-3] Sustainability of freshwater consumption in global watersheds - Pressure in supply chains and the effects of virtual water trade</b> *Masaharu Motoshita (1), Stephan Pfister (2), Matthias Finkbeiner (3) (1. National Institute of Advanced Industrial Science and Technology, Japan, 2. ETH Zurich, Switzerland, 3. Technische Universitaet Berlin, Germany)	<b>[B8-3] Scenario-based planning support for sustainable woody biomass energy business: A case study of a Japanese rural community</b> *Takumi Nishida (1), Yusuke Kishita (1), Noriaki Nakatsuka (2), Fumiteru Akamatsu (2), Yasushi Umeda (1) (1. The University of Tokyo, Japan, 2. Osaka University, Japan)	<b>[C8-3] The Hierarchical Concept of Cochin Pottery Decoration on the Roof of Traditional Buildings</b> *Di Feng (1,2), Shang-chia Chiou (1), Feng Wang (2) (1. National Yunlin University of Science and Technology, Taiwan, 2. Huaiyin Normal University, China)		
		<b>[A8-4] Responsibility of Consuming Countries for Pressure on Mining Capacity: Decomposition Analysis of Scarcity-weighted Metal Footprints in Japan</b> *Ryosuke Yokoi (1), Keisuke Nansai (2), Kenichi Nakajima (2), Takuma Watari (2), Masaharu Motoshita (1) (1. National Institute of Advanced Industrial Science and Technology, Japan, 2. National Institute for Environmental Studies, Japan)	<b>[B8-4] Energy and transport nexus at the country level: the need for aligned energy and transport strategies</b> *Kristina Knuepfer (1), Miguel Esteban (1), Tomoya Shibayama (1) (1. Waseda University, Japan)	<b>[C8-4] Solution for glass recycling using design applying its properties</b> *Hiroyuki Inano (1) (1. Hokkaido Research Organization, Japan)		
16:05-16:15	7:05-7:15	Short Break				



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JST	UTC	Room A	Room B	Room C	Room D
16:15-17:20	7:15-8:20	[A9] Sustainable Society (2)	[B9] Green Energy Technology	[C9] Sustainable Product and Service Design (2)	
		Chair: Lan, Yi-Chen (Western Sydney University, Australia)	Chair: Komoto, Hitoshi (National Institute of Advanced Industrial Science and Technology, Japan)	Chair: Matsumoto, Mitsutaka (National Institute of Advanced Industrial Science and Technology, Japan)	
		<b>[A9-1] Consideration on the desirable way of smart agriculture in Japan</b> *Ayu Washizu (1), Satoshi Nakano (2) (1. Waseda University, Japan, 2. Nihon Fukushi University, Japan)	<b>[B9-1][E] Wind Turbine Minimum Power Loss Optimization, using Nonlinear Mathematical Programming</b> *Kashif Sohail (1), Hooman Farzaneh (1) (1. Kyushu University, Japan)	<b>[C9-1][E] Explore the Framework Construction of Gamification Applied to Basic Design Teaching</b> *Xiao Yang Zhu (1), Shang-chia Chiou (1) (1. National Yunlin University of Science and Technology, Taiwan)	
		<b>[A9-2][E] COVID19 Pandemic Impact on Energy Consumption – A Survey of College Students in Japan</b> *Amin Nazarahari (1), Khalid Alrashoud (1), Koji Tokimatsu (1) (1. Tokyo Institute of Technology, Japan)	<b>[B9-2][E] A Hydrogen Fueling Performance Analysis of Metal Hydride For a Fuel Cell Assisted Bicycle Using GF-08 Cooling System</b> *Daisuke Hara (1), Akihiro Oki (1), Noboru Katayama (1), Kiyoshi Dowaki (1) (1. Tokyo University of Science, Japan)	<b>[C9-2] Product Designer's Dashboard base on AR and 3d model for Locally Oriented Product Design in Iran</b> *Mohammad Zolfaghari (1) (1. Iran University of Science and Technology, Iran)	
		<b>[A9-3][E] Frugal innovation in BoP communities: co-design of a technical solution to support community agriculture in Mexico</b> Victor Darío Cuervo Pinto (2), Dalía Guadalupe de Lucio Hernández (2), *Luis Miguel Lopez Santiago (1), Eduardo Adrián Estrada Maya (2), Jorge García Arroyo (2), Neftalí Jonatán González Yances (2) (1. University of Technology of Troyes, France, 2. National Polytechnic Institute IPN, Mexico)	<b>[B9-3] Developing and Improving a Prototype of Arrayed-Type Offshore Ocean Wave Energy Catcher</b> *Hsiang-Tang Chang (1), Ssu-Kai Chiu1, Yi-Chen Liu (1), Zi-Yi Lee (1), Kuo-Yuan Lo (1) (1. National Kaohsiung University of Science and Technology, Taiwan)	<b>[C9-3] Effective ecodesign implementation with the support of a lifecycle engineer</b> *Tomohiko Sakao (1), Sergio Andres Brambila-Macias (1) (1. Linköping University, Sweden)	
		<b>[B9-4][E] Dielectric Elastomer Transducer (High Efficiency Actuator and Power Generation System)</b> *Seiki Chiba (1), Mikio Waki (2), Yuichi Hirota (3), Noriaki Nishikawa (3), Takashi Yajima (4), Kazuhiro Ohyama (5) (1. Chiba Science Institute, Japan, 2. Wits Inc., Japan, 3. Japan agency for Marine-Earth Science and Technology, Japan, 4. Japan Aerospace Exploration Agency, Japan, 5. Fukuoka Institute of Technology, Japan)	<b>[C9-4][E] Holistic Eco-design Framework Developed Through a Case Study in the Automotive Industry</b> *Jia Jue Johannes Chen (1), Kristoffer Blæsbjerg (1) (1. Technical University of Denmark, Denmark)		
17:20-17:30	8:20-8:30	Short Break			

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17:30-18:30	8:30-9:30	Plenary Keynote 4: <b>Things &amp; Memories</b> <i>Minagawa, Akira</i>   Designer / Founder of <i>minä perhonen</i>		
18:30-19:00	9:30-10:00	Networking		

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JST	UTC	Room A	Room B	Room C	Room D
		[A10] User Perception and Behavior (1)	[B10] OS: Data use in circular design (1)	[C10] Sustainable Product and Service Design (3)	[D10] OS: Regenerative sustainability in the manufacturing industry (1)
		Chair: Boks, Casper (Norwegian University of Science and Technology, Norway)	Chair: Horn, Susanna (Finnish Environment Institute, Finland)	Chair: Sakao, Tomohiko (Linköping University, Sweden)	Chair: Despeisse, Mélanie (Chalmers University of Technology, Sweden)
		<b>[A10-1] Exploring the vocational school of technology Students' Learning Behavior and the Effect of Learning Environment</b> Chang-franw Lee (1), *Tzu-Han Hung (1) (1. National Yunlin University of Science and Technology, Taiwan)	<b>[B10-1][E] Data Platforms as tools for circular economy</b> *Inka Orko (1), Rita Lavikka (1) (1. VTT Technical Research Centre of Finland, Finland)	<b>[C10-1] Environmental Reflections of Lightweight Design in Arburg Plastic Freeforming Additive Manufacturing</b> *Giampaolo Campana (1), Mattia Mele (1), Gregorio Pisaneschi (1), Andrea Zucchelli (1), Michele Ciotti (1), Maurizio Fiorini (1) (1. University of Bologna, Italy)	<b>[D10-1][E] Applying regenerative sustainability principles in manufacturing</b> *Melanie Despeisse (1) (1. Chalmers University of Technology, Sweden)
19:00-20:05	10:00-11:05	<b>[A10-2] The role of pro-environmental attitudes in circular purchasing behavior</b> *Yoon-Young Chun (1), Kenichiro Chinen (2), Mitsutaka Matsumoto (1) (1. National Institute of Advanced Industrial Science and Technology, Japan, 2. California State University, Sacramento, USA)	<b>[B10-2][E] Current challenges in the lifetime extension of smartphones</b> *Paivi Kivikyto-Reponen (1), Susanna Horn (2), Jáchym Judl (2), Jyri Hanski (1), Marjaana Karhu (1), Teuvo Uusitalo (1) (1. VTT Technical Research Centre of Finland, Finland, 2. Finnish Environment Institute, Finland)	<b>[C10-2][E] A methodical concept for the development of sustainable products through radical innovations</b> *Juliane Clara Balder (1), Lisa Hagedorn (1), Rainer Stark (1) (1. Technische Universität Berlin, Germany)	<b>[D10-2][E] A study on Circular Fashion: Profitability and Environmental Impact Analysis</b> *Tanver Ahammad Hazari (1), Md Ibrahim Khalil Ullah (1), Sharnelle Irish Pareno (1), Carla Susana Aquedelo Assuad (1) (1. Norwegian University of Science and Technology, Norway)
		<b>[A10-3] Developing a 'Mind of the Product' for product compliance and market fit</b> *Damien John McGovern (1), Siobhan Fairman (1) (1. Compliance & Risks Ltd, Ireland)		<b>[C10-3] A design navigator to guide the transition towards environmentally benign product/service systems based on LCA results</b> *Abhijna Neramballi (1), Tomohiko Sakao (1), Siri Willskyt (2), Anne-Marie Tillman (2) (1. Linköping University, Sweden, 2. Chalmers University of Technology, Sweden)	<b>[D10-3][E] Energy savings evaluation based on utilizing Recycled PET Bottles in concrete blocks in Iran</b> *Mohammad Zolfaghari (1) (1. Iran University of Science and Technology, Iran)
		<b>[A10-4][E] Developing reusable packaging for FMCG: Consumers' perceptions of benefits and risks of refillable and returnable packaging systems</b> *Xueqing Miao (1), Lise Magnier (1), Ruth Mugge (1) (1. Delft University of Technology, the Netherlands)		<b>[C10-4][E] A Sustainable Product Service System (PSS) Design for Retail Food Loss and Waste: Research Through Design</b> *Tingting Wang (1,2), Dongjuan Xiao (1), Xueqing Miao (2), Yiting Zhang (1), Xinxin Lan (1), Chenxi Yan (1) (1. Jiangnan University, China, 2. Delft University of Technology, the Netherlands)	
20:05-21:15	11:05-11:15	Short Break			

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JST	UTC	Room A	Room B	Room C	Room D
20:15-21:20	11:15-12:20	[A11] User Perception and Behavior (2)	[B11] OS: Data use in circular design (2)	[C11] Sustainable Product and Service Design (4)	[D11] OS: Regenerative sustainability in the manufacturing industry (2)
		Chair: Nonaka, Tomomi (Ritsumeikan University, Japan)	Chair: Horn, Susanna (Finnish Environment Institute, Finland)	Chair: Wever, Renee (Linköping University, Sweden)	Chair: Despeisse, Mélanie (Chalmers University of Technology, Sweden)
		<b>[A11-1] Fifty shades of Shame in Design for Sustainable Behaviour</b> *Casper Boks (1), June Kyong Trondsen (1) (1. Norwegian University of Science and Technology, Norway)	<b>[B11-1] Opportunities and challenges of blockchain technology in boosting sustainability</b> *Kristiina Valtanen (1) (1. VTT Technical Research Centre of Finland, Finland)	<b>[C11-1] Conceptualising design fixation in the sustainability context</b> Raphael Wasserbaur (1), *Tomohiko Sakao (1) (1. Linköping University, Sweden)	<b>[D11-1][E] Circular furniture design: A case study from Swedish furniture industry</b> Linnea Ankarberg (1), *Nazli Terzioğlu (2), Erik Sundin (1) (1. Linköping University, Sweden, 2. Brunel University London, UK)
		<b>[A11-2] Perceptions of Foreign-Brand Electric Vehicles Made in the US</b> *Kenichiro Chinen (1), Mitsutaka Matsumoto (2) (1. California State University, Sacramento, USA, 2. National Institute of Advanced Industrial Science and Technology, Japan)	<b>[B11-2] Data as a tool for a sustainable design and a circular economy</b> *Lotta Toivonen (1), Nani Pajunen (1) (1. The Finnish Innovation Fund Sitra, Finland)	<b>[C11-2][E] Depth and detail or quick and easy? Benefits and drawbacks of two approaches to define sustainability criteria in product development</b> *Matilda Watz (1), Sophie I. Hallstedt (1) (1. Blekinge Institute of Technology, Sweden)	<b>[D11-2] Environmental Performance of Plant Cultivation Using Adsorbent of Natural Impurities through Hydrogen Purification Process</b> *Haruna Hirose (1), Kiyoshi Dowaki (1) (1. Tokyo University of Science, Japan)
		<b>[A11-3][E] Modelling Customer Preference for Sustainability Information via Clustering Analysis</b> *Sze Yin Kwok (1), Vedaşree Reddy (1), Apoorva Kothapally (1), Veselka Boeva (1) (1. Blekinge Institute of Technology, Sweden)		<b>[C11-3][E] Designing Interventions for Sustainability: A conceptual framework for information scoping in the design research phase</b> *Shilpi Reema Rath, Wanjun Chu (1), Nazli Terzioğlu (2), Renee Wever (1) (1. Linköping University, Sweden, 2. Brunel University London, UK)	
			<b>[C11-4][E] Exploring frugal innovation as an eco-design strategy: a case study of a water access solution at the BoP.</b> *Luis Miguel Lopez Santiago (1), Serge Rohmer (1), René Díaz-Pichardo (1,2), Tatiana Reyes (1) (1. University of Technology of Troyes, InSyTE, France, 2. South Champagne Business School, France)		
21:20-21:30	12:20-12:30	Short Break			

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21:30-21:50	12:30-12:50	Award Ceremony & Closing Session
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