International Symposium on Feedstock Recycling of Polymeric Materials (ISFR2023)

Conference Program

*General oral presentation consists of 15-minute presentation & discussion.
**Student oral presentation consists of 12-minute presentation & discussion.

6, November 2023, Mon.

Opening Ceremony **(9:00-9:20, November 6th, Mon.)**

Opening Remarks
Shigeru Yao, Conference Chair /President of FSRJ, Japan
Positioning of plastic recycling in the circular economy (as a circular industry)
Toshiaki Yoshioka, Conference Committee/Tohoku University, Japan

Keynote Talk 1 **(9:25-10:05, November 6th, Mon.)**

Chair:

Thermo-Chemical Recycling of Plastics
Paul T. Williams, University of Leeds, United Kingdom

Oral Session 1 **(10:05-10:50, November 6th, Mon.)**

Chair:

O1-1 Development of Biomass Fractionation Technology to Support the Widespread Use of Bioplastics in Society
Kiyohiko Igarashi, The University of Tokyo, Japan

O1-2 Upcycling by Precise Thermal Degradation for Waste Polyolefins
Daisuke Sasaki, San-ei Kogyo Corporation, Japan

O1-3 Chemical Upcycling of Olefinic Plastics to Valuable Chemicals by Hydrogenolysis Over Heterogeneous Ru-based Catalysts
Masazumi Tamura, Osaka Metropolitan University, Japan

Break (10:50-11:05, November 6th, Mon.)

Invited Talk 1 **(11:05-11:30, November 6th, Mon.)**

Chair:

Co-pyrolysis of Wheat Straw and PET Plastic: Kinetics and Product Analysis
Kaustubha Mohanty, Indian Institute of Technology Guwahati, India

Oral Session 2 **(11:30-12:15, November 6th, Mon.)**

Chair:

O2-1 The Current Dilemma of Promoting Chemical Recycling of Plastic Waste in China and the Importance of Dechlorination
Jiaqi Lu, Shanghai University of Engineering Science, China

O2-2 Fluorine Recovery from Used Small Lithium-Ion Batteries for Halogen Circulation
Yuko Saito, Tohoku University, Japan

O2-3 Energetic Utilization of Dewatered Sludge from the Food-processing Industry
Awassada Phongphiphat, King Mongkut's University of Technology Thonburi, Thailand

Lunch (12:15-13:15, November 6th, Mon.)

Poster Session 1 **(13:15-14:00, November 6th, Mon.)**
Poster Session 2 **(14:00-14:45, November 6th, Mon.)**

Break (14:45-14:55, November 6th, Mon.)

Keynote Talk 2 **(14:55-15:35, November 6th, Mon.)**
Chair:

Smart Films Derived from Regenerative Bioresources
Hathaikarn Manuspiya, Center of Excellence on Petrochemical and Materials Technology, Thailand

Student Session 1 **(15:35-17:23, November 6th, Mon.)**
Chair:

S1-1 Analyzing the Relationship between Mechanical Properties and Inner Structure of Compounded Polyethylene Virgin Film with Different Extrusion Condition
Maho Toshimitsu, Fukuoka University, Japan

S1-2 Recycling of E-waste Plastics by Using Supercritical Fluids
Amrita Preetam, Indian Institute of Technology, Delhi, India

S1-3 Pyrolysis Characteristics of Tire Rubber at Lower Temperatures
Emmanuel Ikechukwu Awosu, Tohoku University, Japan

S1-4 Chemical Recycling of PVC-containing Plastic Waste for Recycling of Metals from Composite Materials
Michael Peer, Fraunhofer Institute for Environmental, Safety and Energy Technology UMSICHT; Institute Branch Sulzbach-Rosenberg, Germany

S1-5 Production of Wax-rich Pyrolysis Oil from Polyethylene Using a New-type Fluidized Bed Reactor
Jaekyung Kim, University of Seoul, Republic of Korea

S1-6 Sequential Conversion of Fractionated Lignin from Bamboo Waste into Bio-graphitic Materials
Mohammed Abdillah Ahmad Farid, Kyushu Institute of Technology, Japan

S1-7 Assessing the Changes in Thermal and Catalytic Pyrolysis of Lignocellulose when Shifting from Batch to Continuous Systems
Maurizio Pagano, Imdea Energy Institute, Thermochemical processes unit; Rey Juan Carlos University, Spain

S1-8 Cellulose Luminescent Hydrogels Loaded with Stable Carbon Dots for Duplicable Information Encryption and Anti-counterfeiting
Juan Wang, Osaka University, Japan

S1-9 Exploring the Link between Environmental Education, Knowledge, Facilities, and the Intention of student to Engage in Plastic Waste Separation and Recycling: A Case Study in Indonesian Teacher Training Institutions
Ardyanto Tanjung, The University of Kitakyushu; Universitas Negeri Malang, Indonesia

7, November 2023, Tue.

Keynote Talk 3 **(9:00-9:40, November 7th, Tue.)**

Chair:

Precision Synthesis of Novel Degradable Polymers from Renewable Bio-based Resources
Kotaro Satoh, Tokyo Institute of Technology, Japan

Oral Session 3 **(9:40-10:25, November 7th, Tue.)**

Chair:

O3-1 Advanced Plastic Circulation System Constructed from Basic Polymer Physics
Shigeru Yao, Fukuoka University, Japan

O3-2 Effect of Novel Extrusion Process on Mechanical Properties of Low-density Polyethylene in Different Grades
Patchiya Phanthong, Fukuoka University, Japan

O3-3 Understanding Rheological Studies of Plastics in Mechanical Recycling Process: A Combined MD and NEMD Simulations Study
Mohammed Althaf Hussain, Fukuoka University, Japan

Break (10:25-10:40, November 7th, Tue.)

Invited Talk 2 **(10:40-11:05, November 7th, Tue.)**

Chair:

Microplastics Analysis Using Customized Filtration Device and Py-GC/MS/MS
Young-Min Kim, Daegu University, Republic of Korea

Oral Session 4 **(11:05-11:50, November 7th, Tue.)**

Chair:

O4-1 Verification of the Existence of Metal Compounds in the Sea and their Implications for Marine Microplastic Degradation
Hisayuki Nakatani, Nagasaki University, Japan

O4-2 Assessing Plastic Marine Debris on Ainsoshima Remote-island Foreshore: Source, Distribution, and Socio-activity
Indriyani Rachman, The University of Kitakyushu, Japan

O4-3 RDF Utilization in Thai's Local Municipality by Mechanical Biological Treatment
Panida Payomthip, National Institute for Environmental Studies, Japan

Lunch (11:50-12:50, November 6th, Mon.)

Keynote Talk 4 **(12:50-13:30, November 7th, Tue.)**

Chair:

Ionic Liquids in Feedstock Recycling
Akio Kamimura, Yamaguchi University, Japan

Oral Session 5 **(13:30-14:15, November 7th, Tue.)**

Chair:

O5-1 Recycling of Safety-Certified Consumer Product for Sustainability
Shigetaka Seki, Consumer Product Safety Association (CPSA), Japan

O5-2 Accelerating a Circular Economy of EV Battery in South Korea

Ji Hye Jo, Korea Environment Institute, Republic of Korea

O5-3 RDF Recovery from Final Disposal Sites: Challenges and Opportunities in Thailand
Komsilp Wangyao, King Mongkut's University of Technology Thonburi, Thailand

Break (14:15-14:30, November 7th, Tue.)

Student Session 2 **(14:30-16:06, November 7th, Tue.)**

Chair:

S2-1 Wax Production of Waste Polyethylene via Catalytic Pyrolysis
Joo-Hyeong Yoon, Korea Institute of Industrial Technology, Republic of Korea

S2-2 Slow and Rapid Co-pyrolysis Characteristic of Vacuum Residue and Bio-oil
Miranti Budi Kusumawati, Tohoku University, Japan

S2-3 Sustainable Utilization of Plastic Wastes using Non-catalytic and Catalytic Fast Pyrolysis from the Viewpoint of Circular Economy
Subhan Kumar Pal, Indian Institute of Technology, Madras, India

S2-4 Catalytic Co-pyrolysis of Biomass and Plastic Waste: A Study of the Thermal Degradation Using Rapid Analytical Pyrolysis (Py-GC/MS)
Virdi Chaerusani, Hirosaki University, Japan

S2-5 Simultaneous Removal of Brominated and Chlorinated Species During the Production of Oils by E-waste Plastics Catalytic Hydropyrolysis
Lidia Amodio, Imdea Energy Institute, Thermochemical processes unit; Rey Juan Carlos University, Spain

S2-6 A Legislative Review of Single-Use Plastic Consumption in Indonesia and Its Prospects for Digital Nudge Decoupling
Machmuddin Fitra Miftahadii, The University of Kitakyushu, Japan

S2-7 Analysis of Environmental Impact Reduction Effect of Mushroom-Based Packaging
Jonghyo Lee, Inha University, Republic of Korea

S2-8 Bio-Inspired Homogeneous Conductive Hydrogel with Flexibility and Adhesiveness for Information Transmission and Sign Language Recognition
Peng Du, Osaka University, Japan

Break (16:06-16:20, November 7th, Tue.)

Plenary Talk **(16:20-17:20, November 7th, Tue.)**

Chair:

Recent Advances in Ocean Plastic Studies: Current Status and Future View
Atsuhiko Isobe, Kyushu University, Japan

Gala Dinner **(18:00-20:00, November 7th, Tue.)**

8, November 2023, Wed.

Invited Talk 3 **(9:00-9:25, November 8th, Wed.)**

Chair:

Recovery of Chemicals and Building Blocks from Diverse Plastic Wastes Through Hydrothermal Liquefaction
Ravikrishnan Vinu, Indian Institute of Technology, Madras, India

Oral Session 6 **(9:25-10:10, November 8th, Wed.)**

Chair:

O6-1 Depolymerization of Oxyphenylene-Based Super Engineering Plastics by Hydroxylation-Depolymerization
Yasunori Minami, National Institute of Advanced Industrial Science and Technology, Japan

O6-2 Maximizing Light Olefins Production via Circulating Fluidized Catalytic Cracking of Waste Plastic Pyrolysis Oil (WPPO)
Do Kyoung Kim, Korea Research Institute of Chemical Technology, Republic of Korea

O6-3 Highly Durable CeO_2 Oxygen Nanocarrier for Low-temperature Gasification of Waste Plastics
Takaaki Tomai, Tohoku University, Japan

Break (10:10-10:25, November 8th, Wed.)

Invited Talk 4 **(10:25-10:50, November 8th, Wed.)**

Chair:

Investigation Lignin Depolymerization for Chemical Feedstocks with Py-GCMS
Chanatip Samart, Thammasat University, Thailand

Oral Session 7 **(10:50-11:35, November 8th, Wed.)**

Chair:

O7-1 Optimizing Mixed Waste Plastic Sorting Scenarios for Enhanced Plastic Recycling
Hajime Ohno, Tohoku University, Japan

O7-2 Environmental Benefits from Chemical Recycling of Plastic Waste and its Contribution to a Circular Economy: A Critical Review
Chengyao Zhang, The University of Tokyo, Japan

O7-3 Geographic and Technical Matching Approach Supporting the Low-carbon Style Recycling in Japan
Richao Cong, University of Kitakyushu, Japan

Closing Ceremony **(11:40-12:00, November 8th, Wed.)**

Poster Session 1

P1-1 Defluorination Reaction of Fluoropolymers in Wet Process
Riku Oda, Tohoku University, Japan

P1-2 Mechanical Properties and Morphology of Polyethylene Films Processed by Extruder with Molten Resin Reservoir
Takumitsu Kida, The University of Shiga Prefecture, Japan

P1-3 Study on Enhancing Light Olefins Production via Catalytic Cracking from Waste Plastic Pyrolysis Oil
Dae Hun Mun, Korea research institute of chemical technology, Republic of Korea

P1-4 High-throughput evaluation of pyrolytic synergistic interactions during co-pyrolysis of polystyrene and cellulose by Py-GC/multi-detector system
Hayato Yamaguchi, Tohoku University, Japan

P1-5 Examination of Chemical/Material Recycling by Thermal Decomposition of Polylactic Acid/Polypropylene Polymer Alloy
Takuma Kasugai, Kanazawa Institute of technology, Japan

P1-6 The Potential of Plastic Waste From Landfill Mining; A Case Study of The Largest Landfill in Eastern Indonesia
Ramdiana Muis, The Universitas of Kitakyuhsu, Japan

P1-7 Evaluation of local perception of plastic waste management and recycling
Sirintornthep Towprayoon, King Mongkut's University of Technology Thonburi, Thailand

P1-8 Thermal Degradation of Epoxy Resin with and without Copper Layer
Sylwia Oleszek, Kyoto University, Japan

P1-9 Technology to Reduce Environmental Load by Improving Interfacial Adhesion of New Compatibilizer in CNF/CF Hybrid Composites
Hikaru Terada, Kanazawa Institute of Technology, Japan

P1-10 Development of a Predictive Model for Treatment Status and Generation Amount of Marine Litter.
Yeong Hun Choe, Inha University, Republic of Korea

P1-11 Multifaceted Degradation Evaluation of PET Bottles Subjected to Outdoor Exposure Test
Takaya Satoh, JEOL Ltd., Japan

P1-12 Effective Recovery of High-Purity Copper and Poly (vinyl chloride) from End-of-Life Wire Harness Cables
Harendra Kumar, Tohoku University, Japan

P1-13 Measuring the Spread of Macroplastic in Urban Flood Channel: Case Study in Indonesia, A Developing Country
Nani Anggraini, The University of Kitakyushu, Japan

Poster Session 2

P2-1 Development of PET to Plasticizer Chemical Recycling
Shogo Miyazaki, Yamaguchi Prefectural Industrial Technology Institute, Japan

P2-2 Co-Pyrolysis Characteristics of Poly(lactic acid) and Petroleum Plastics
Wakana Adachi, Tohoku University, Japan

P2-3 Modeling Copper and Poly (Vinyl Chloride) Separation from Cable Waste Using an Asynchronous-Parallel Recurrent Neural Network
Jiaqi Lu, Shanghai University of Engineering Science, China

P2-4 Evaluations of Bio-Composites with High Content Biomass Fiber
Jindi Wu, Kyushu Institute of Technology, Japan

P2-5 Effects of the Optional Equipment for Twin-Screw Extruder with Molten Resin Reservoir on the Mechanical Properties of Recycled Plastics
Yuuki Yamashita, Fukuoka University, Japan

P2-6 Kinetic Model for Catalytic Upcycling of Polyolefin Over Heterogeneous Supported Ru Catalyst
Atsushi Takahashi, Tohoku University, Japan

P2-7 Staged Steam Pyrolysis of Waste Tire; Behavior of Sulfur in Pyrolysis Products
Soon-Ho Kim, Korea Institute of Industrial Technology, Republic of Korea

P2-8 Effects of Pyrolysis Temperature on Isoprene Production from Tire Rubber
Kentaro Genda, Tohoku University, Japan

P2-9 Analysis of the Products of Catalytic Cracking by Using Tandem μ-Reactor-Gas Chromatography/Mass Spectrometry: Catalyst Screening in the Recycle of Waste Plastics

Masayoshi Muraoka, Toray Research Center, Inc., Japan

P2-10 Effect of Iron Addition on Debromination of WPCBs Using Wet Ball Mill Process
Wataru Shimomura, Tohoku University, Japan

P2-11 Analysis of Environmental Impact of Engineering Plastic Resins using LCA and Carbon Footprint
Dong Uk Kim, Inha University, Republic of Korea

P2-12 Microplastic and Heavy Metals Interactions in Aqueous Solution: Batch Experiment
Sylwia Oleszek, Kyoto University, Japan