

ORAL SESSIONS

Monday 4 June

Session 1: PYROLYSIS INSTRUMENTATIONS

09:45-10:45 Chair: **Shogo Kumagai** (Tohoku University, Japan)

09:45-10:15 Keynote K1

Anthony Dufour (French National Centre for Scientific Research (CNRS) Nancy, France)
“Multitechnique Characterization of Biomass Pyrolysis”

10:15-10:30 O1-1

Atsushi Watanabe (Frontier Laboratories Ltd., Japan)

“Evolved Gas Analysis-Mass Spectrometry under Air Atmosphere Using A Temperature Programmable Furnace Pyrolyzer”

10:30-10:45 O1-2

Hongyan Wang (Tianjin University, China)

“A New Method for High Pressure Pyrolysis of n-Decane: Tandem Micro-Reactor with Online GC-MS/Fid”

11:15-12:30 Chair: **José A. González Pérez** (IRNAS-CSIC, Spain)

11:15-11:30 O1-3

Alba Dieguez-Alonso (Technische Universität Berlin, Germany)

“Application of Laser-Based Diagnosis for Characterization of Slow Pyrolysis at Particle and Reactor Level”

11:30-11:45 O1-4

Yang Fang (Huazhong University of Science and Technology, China)

“Experimental and Computational Investigations of Glucose Pyrolysis: Formation of 3-Hydroxy- γ -Butyrolactone and 3-(2H)-Furanone”

11:45-12:00 O1-5

Ryota Watanabe (National Institute of Advanced Industrial Science and Technology (AIST), Japan)

“Characterization of Nanocomposites by Dispersing Mesoporous Silica in Functionalized Polypropylene Containing Hydroxyl Groups by Evolved Gas Analysis”

12:00-12:15 O1-6

Yanan Zhu (University of Science and Technology of China, China)

“Pyrolysis Study of Huai-Nan Coal with Different Particle Sizes Using On-Line Py-PI-TOF MS”

12:15-12:30 O1-7

Paul P. J. de Wild (Energy research Centre of the Netherlands (ECN), The Netherlands)

“Biomass Pyrolysis for Marine Fuel and Asphalt Products”

Session 2: ANALYTICAL PYROLYSIS OF NATURAL PRODUCTS

13:45-14:45 Chair: **Lili Wang** (Zhejiang University of Technology, China)

13:45-14:15 Keynote K2

Yasuyuki Ishida (Chubu University, Japan)

“Selective Thermochemolysis-Gas Chromatography of Natural Organic Compounds in The Presence of Various Organic Alkali Reagents”

14:15-14:30 O2-1

Laurent Grasset (Université de Poitiers, France)

“Thermochemolysis for the Analysis of Carbohydrates, Lignin and Lipids in a Peat Bog. Comparison with Classical Chemical Methods”

14:30-14:45 O2-2

Geoffrey Abbott (Newcastle University, UK)

“Global Carbon Sequestration in Peat-Moss Ecosystems under A Changing Climate”

17:00- 18:00 Chair: **Yasuyuki Ishida** (Chubu University, Japan)

17:00-17:15 O2-3

Zhongping Huang (Zhejiang University of Technology, China)

“Combined Multivariate Data Analysis of Pyrolysis-GC/MS and Direct Analysis in Real Time Mass Spectra for Profiling and Classification of Chinese Propolis”

17:15-17:30 O2-4

Taina Ohra-aho (VTT Technical Research Centre of Finland Ltd, Finland)

“Steel Industrial Slags as Novel Catalysts for the Conversion of Biomass into Bio-Oil, Evaluated by Analytical Pyrolysis”

17:30-17:45 O2-5

Pushkar S. Marathe (University of Twente, The Netherlands)

“The Interplay between Chemistry and Heat/Mass Transfer During Pyrolysis of Lignin”

17:45-18:00 O2-6

Li Yin (Huazhong University of Science and Technology, China)“Pyrolysis Mechanism of β -O-4 Type Lignin Model Polymers with Different Chemical Form of Potassium Additives”

Tuesday 5 June

Session 3: FUNDAMENTAL PYROLYSIS REACTIONS AND KINETICS

09:15-10:30 Chair: **Liang Wang** (SINTEF Energy Research, Norway)09:15-09:45 *Keynote* K3**Curt Wentrup** (The University of Queensland, Australia)

“Adventures with Flash Vacuum Pyrolysis”

09:45-10:00 O3-1

Xiaoxia Li (University of Chinese Academy of Sciences, China)

“Understanding the Comprehensive Chemistry in Pyrolysis with Large Scale Reaxff Molecular Dynamics”

10:00-10:15 O3-2

Valerie Burkle-Vitzthum (CNRS-Nancy, France)“Differential Kinetic Effect of H₂S on the Pyrolysis of Alkanes vs Alkylaromatics at High Pressure”

10:15-10:30 O3-3

Agnieszka Korus (Silesian University of Technology, Poland)

“The Effect of Extractives on the Catalytic Properties of Pine-Derived Activated Biochar”

11:00-12:30 Chair: **Raymond Michels** (CNRS Nancy, France)

11:00-11:15 O3-4

Xi Yu (Aston University, UK)

“Population Balance Model for Biomass Fast Pyrolysis”

11:15-11:30 O3-5

Andrés Anca-Couce (Graz University of Technology, Austria)

“Proteins Pyrolysis Scheme for Predicting the Release of NO_x Precursors: NH₃ and HCN”

11:30-11:45 O3-6

Liang Wang (SINTEF Energy Research, Norway)

“A Study of Charcoal Formation from Cellulose under Different Conditions”

11:45-12:00 O3-7

Markus Nordlund (Philip Morris Products S.A., Switzerland)

“Thermal Decomposition Behavior of the Tobacco Material Used in a Heated Tobacco Product”

12:00-12:15 O3-8

Paola Giudicianni (Istituto di Ricerche sulla Combustione, CNR, Italy)

“Effect of Na⁺ Ions on the Slow Pyrolysis of Xylan”

12:15-12:30 O3-9

Helena Jönsson (Pyrol AB, Sweden)

“Better Analyses with Pyrolysis Theory”

Session 4: CULTURAL HERITAGE, ART AND CONSERVATION

13:45-14:45 Chair: **Tetsuo Miyakoshi** (Meiji University, Japan)

13:45-14:15 *Keynote* K4

Francesca Modugno (University of Pisa, Italy)

“Investigating Synthetic Polymers in Heritage Objects: The Role of Innovative Methods Based on Analytical Pyrolysis”

14:15-14:30 O4-1

Sylvie Derenne (Sorbonne Université CNRS EPHE, France)

“Pyrolytic Study of Morphologically Preserved Dinosaur Feathers. Comparison with Modern Feathers”

14:30-14:45 O4-2

Michael R. Schilling (Getty Conservation Institute, USA)

“Wood Species Identification Using Heart-Cut Pyrolysis-Gas Chromatography/Mass Spectrometry and F-Search Data Interpretation”

15:00-16:00 Chair: **Sylvie Derenne** (Sorbonne Université CNRS EPHE, France)

15:00-15:15 O4-3

Jeannette J. Lucejko (University of Pisa, Italy)

“The Catalysing Effect of Alum in Degradation Processes of Carbohydrates in Archaeological Wood”

15:15-15:30 O4-4

Michel Sablier (Muséum national d'histoire naturelle, France)

“Application of Pyrolysis, Gas Chromatography and Mass Spectrometry for the Analysis of East Asian Handmade Papers”

15:30-15:45 O4-5

Noriyasu Niimura (JEOL Ltd., Japan)

“Application of Pyrolysis-Soft Ionization Mass Spectrometry to Japanese Lacquer”

15:45-16:00 O4-6

Siti Baidurah Yusoff (Universiti Sains Malaysia, Malasia)

“Biodegradation Mechanism of Polyhydroxyalkanoates Studied by Thermally Assisted Hydrolysis and Methylation-Gas Chromatography”

Wednesday 6 June

Session 5: BIO-OIL, BIOCHARS, AND BIOMASS

09:15-10:30 Chair: **Wolter Prins** (Ghent University, Belgium)

09:15-09:45 Keynote K5

Shurong Wang (Zhejiang University, China)

“Challengings in the Fundamental Research of Biomass Pyrolysis for the Production of Liquid Fuels”

09:45-10:00 O5-1

Robert Stirling (University of Nottingham, UK)

“The Effect of Hydrothermal Carbonisation on the Char Reactivity of Biomass”

10:00-10:15 O5-2

Yannik Ille (Karlsruhe Institute of Technology (KIT), Germany)

“Modelling of the Condensation of Fast Pyrolysis Vapours Including Aerosol Formation”

10:15-10:30 O5-3

Alexander Shaw (Queen’s University Belfast, UK)

“Phenolic Bio-Oil Compound Stabilities Assessment through Density Functional Study”

11:00-12:30 Chair: **Guozhu Liu** (Tianjin University, China)

11:00-11:15 O5-4

Ondrej Masek (University of Edinburgh, UK)

“Use of Mineral Additives to Boost Biochar Yield”

11:15-11:30 O5-5

Charles A. Mullen (USDA Agriculture Research Service, USA)

“Combustion Reduction Integrated Pyrolysis System Development for On-Farm Bioenergy, Biofuels and Biochemicals Production”

11:30-11:45 O5-6

Frederik Ronsse (Ghent University, Belgium)

“Influence of Citric Acid Leaching on the Yield and Chemical Composition of Pyrolysis Products from Sugarcane Residues”

11:45-12:00 O5-7

Jean-Michel Commandre (CIRAD, UPR BioWooEB, France)

“Catalytic Effect of Potassium Carbonate on Condensable Species Released During Wood Torrefaction”

12:00-12:15 O5-8

Takashi Nomura (Kyoto University, Japan)

“Pyrolysis of Cellulose in Aromatic Solvent: Reactivity, Product Selectivity and Char Morphology”

12:15-12:30 O5-9

Japhet O. Oladipo (University of Leeds, UK)

“A Three-Stage Pyrolysis-Reformer-Shift Reactor System for Maximising Hydrogen Production from Waste Biomass”

Session 6: WASTED POLYMERS AND RECYCLING

13:45-14:45 Chair: **Toshiaki Yoshioka** (Tohoku University, Japan)

13:45-14:15 *Keynote* K6

Tsunekichi Kuriyama (Showa Denko K.K., Japan)

“Waste Plastic Chemical Recycling System for Sustainable Society”

14:15-14:30 O6-1

Peter Hense (Fraunhofer Institute for Environmental, Safety, and Energy Technology UMSICHT, Germany)

“From Lab to Industrial Scale – Development of the Platform Technology iCycle®”

14:30-14:45 O6-2

Jon Alvarez (University of the Basque Country UPV/EHU, Spain)

“Fast Co-Pyrolysis of Biomass and Waste Tyres in a Conical Spouted Bed Reactor”

17:00-18:00 Chair: **Hiroaki Sato** (AIST, Japan)

17:00-17:15 O6-3

Shogo Kumagai (Tohoku University, Japan)

“Online Products Monitoring during Two-Step Pet Pyrolysis-Calcium Oxide Reaction Using Tandem μ -Reactor-GC/MS”

17:15-17:30 O6-4

Chuan Ma (National Institute of Advanced Industrial Science and Technology (AIST), Japan)

“A Two-Stage Catalytic Pyrolysis of Printed Circuit Boards in the Presence of Fe and Ni Metals”

17:30-17:45 O6-5

Carlos Jimenez (Universidad del Atlántico, Colombia)

“Analysis of Pyrolysis and Co-Pyrolysis of Waste Acrylonitrile Butadiene Styrene (ABS) and High Impact Polystyrene (HIPS)”

17:45-18:00 O6-6

Hiroyuki Yanagisawa (SGS Japan Inc., Japan)

“Simultaneous Screening of Additives in Electrical and Electronic Components Using Pyrolyzer/Thermal Desorption Gas Chromatography Mass Spectrometry (Py/TD-GC-MS)”

Thursday 7 June

Session 7: CATALYTIC PYROLYSIS, BIO-OIL AND BIOMASS

09:15-10:30 Chair: **Anthony Dufour** (CNRS Nancy, France)

09:15-09:45 Keynote K7

Wolter Prins (Ghent University, Belgium)

“Catalytic Fast Pyrolysis of Biomass: Is it a Way to Go?”

09:45-10:00 O7-1

Andreas Hornung (Fraunhofer Institute for Environmental, Safety, and Energy Technology UMSICHT, Germany)

“Fuels from Solid Waste Biomass by Thermo-Catalytic Reforming”

10:00-10:15 O7-2

Hessam Jahangiri (University of Birmingham, UK)

“Catalytic Fast Pyrolysis of Cellulose over Gallium/Zeolite Catalysts via Py-GC-MS”

10:15-10:30 O7-3

Ningbo Gao (Xi'an Jiaotong University, China)

“A Comparative Study on the Steam Reforming of Real Coal Tar over Ni-Co/Ceramic Foam Catalyst for Hydrogen Production Effect of Ni/Co Ratio”

11:00-12:00 Chair: **Charles A. Mullen** (USDA Agriculture Research Service, USA)

11:00-11:15 O7-4

Liangyuan Jia (CNRS Nancy, France)

“Stability and Selectivity of Hierarchical Zeolites for Biomass Catalytic Fast Pyrolysis”

11:15-11:30 O7-5

Yotwadee Hawangchu (Chulalongkorn University, Thailand)

“Heterogeneous Thermo-Catalytic Conversion of Technical Lignin to Value-Added Chemicals and Biofuels”

11:30-11:45 O7-6

Changsong Hu (Southeast University, China)

“Effects of Nascent Char on Ex-Situ Catalytic Fast Pyrolysis of Wheat Straw”

11:45-12:00 O7-7

Young-Min Kim (Hallym University, Korea)

“Fast Screening of Catalysts in Co-Pyrolysis and Hydrodeoxygenation Reactions Using a Tandem Micro-Reactor GC/MS”

12:00-12:30 Discussion for Pyro2020 and the future

Session 8: MARIN AND GEOCHEMISTRY

13:30-15:00 Chair: **Daniele Fabbri** (Università di Bologna,, Italy)

13:30-14:00 Keynote K8

Elizabeth C. Minor (University of Minnesota Duluth, USA)

“Characterizing Microplastics: Insights from Lake Superior, Earth’s Largest Freshwater Lake by Area”

14:00-14:15 O8-1

Laurent Lemeé (University of Poitiers, France)

“Double Shot Thermochemolysis to Envisage the Fate of Fertilizing Materials of Residual Origin”

14:15-14:30 O8-2

Yunpeng Wang (Guangzhou Institute of Geochemistry, Chinese Academy of Sciences, China)

“Effects of Pressure on Gas Generation from Marine Kerogen: Pyrolysis, Kinetics, and Implications”

14:30-14:45 O8-3

Shipei Xu (Institute of Process Engineering, Chinese Academy of Sciences, China)

“Pyrolysis of Coal with High Heating Rate in an Infrared Heating Reactor”

14:45-15:00 O8-4

Rajasekhar Reddy Busigari (Indian Institute of Technology Madras, India)

“Production of Coke from Different Ranks of Coals via Microwave Heating and Comprehensive Product Characterization”

Friday 8 June

Session 9: BIO-OIL, BIOCHARS AND BIOMASS

09:15-10:30 Chair: **Haruo Kawamoto** (Kyoto University, Japan)

09:15-09:30 O9-1

Yu Long (Curtin University, Australia)

“Insights into Acid-Catalysed Levoglucosan Pyrolysis Mechanism at Low Temperatures”

09:30-09:45 O9-2

Begum Guzelciftci (University of Seoul, Korea)

“Production of Phenols from a Continuous Two-Stage Pyrolysis of Wood”

09:45-10:00 O9-3

Chetna Mohabeer (Normandie University, France)

“Investigating Catalytic De-Oxygenating of Pyrolytic Products of Woody Biomass Components Using HZSM-5 and Fe-HZSM-5”

10:00-10:15 O9-4

Cristian Torri (Università di Bologna, Italy)

“Evaluation of the Technical Performance of a New Pyrolysis-Anaerobic Digestion (Py-AD) Process: from Small Scale to Continous Process”

10:15-10:30 O9-5

Marco Mattonai (University of Pisa, Italy)

“Influence of Crystallinity Index and Polymerisation Degree on the Thermal Behaviour of Cellulose a Systematic Study Using EGA-MS and Py-GC/MS”

11:00-12:00 Chair: **Takayuki Honda** (Meiji University, Japan)

11:00-11:15 O9-6

Mohd Asmadi (Universiti Teknologi Malaysia, Malaysia)

“Role of Activation Process in Pyrolytic Cellulose Devolatilization”

11:15-11:30 O9-7

Maidor Legarra-Arizaleta (University of Hawaii at Manoa, USA)

“Carbonization of Biomass in Constant-Volume Reactors”

11:30-11:45 O9-8

Zsuzsanna Czégény (Research Centre for Natural Sciences, Hungarian Academy of Sciences, Hungary)

“Effect of Inorganic Ions during Torrefaction of Wheat Straw and Black Locust”

11:45-12:00 O9-9

Gamzenur Özsin (Bilecik Şeyh Edebali University, Turkey)

“Pyrolysis and Co-Pyrolysis Characteristics of Biomass and PVC Using TGA/MS/FT-IR Technique”