2025 ISWFPC

International Symposium on Wood, Fiber, and Pulping Chemistry

NC STATE

June 2-6, 2025
Raleigh, NC
USA

Welcome to the 2025 ISWFPC

We are delighted to welcome you to the 2025 International Symposium on Wood, Fiber, and Pulping Chemistry (ISWFPC). Over the years, ISWFPC has become the premier global forum for scientific exchange in fiber and pulping chemistry, wood components, bioeconomy, and lignocellulosic materials. This symposium brings together hundreds of researchers, scientists, and engineers from around the world to share ideas, innovations, and collaborations.

Some of you may recall that we originally planned to host the symposium in 2021 but were forced to cancel due to the global pandemic. This year, we are excited to receive over 200 abstracts representing participants from 20 countries.

We are thrilled to welcome you to Raleigh and NC State University, and we hope you take full advantage of the engaging program and the many opportunities for networking and collaboration.

Once again, welcome and thank you for being part of the 2025 ISWFPC.

Warm regards,

Sunkyu Park and Hasan Jameel
Symposium Chairs

Prof. Sunkyu Park

Prof. Hasan Jameel

Lifetime Achievement Award

Prof. Hou-min Chang

Prof. Hou-min Chang is Reuben B. Robertson Professor Emeritus at North Carolina State University. This symposium honors the achievements of his 60-year career in the field of wood chemistry and technology. Dr. Chang obtained his B.S. in Forestry from National Taiwan University in 1962. He received his M.S. (1966) in Organic Chemistry and his Ph.D. (1968) in Wood Chemistry from the University of Washington. Dr. Chang joined the Department of Wood and Paper Science at NC State in 1968. Dr. Chang's research focuses on oxygen delignification chemistry, bleaching reactions, residual lignin characterization in kraft pulp, and its association with polysaccharides. He utilizes biotechnology and advanced analytics to study wood components. Notably, he led groundbreaking research on lignin biodegradation and contributed to the MyCoR process for effluent decolorization. He received the Outstanding Graduate Teaching Award from the NC State Alumni Association in both 1993 and 1994. He was a visiting Professor at the University of Tokyo in 1981 and at Kyoto University in 1998. He was appointed the Reuben B. Robertson Distinguished Professor of Pulp and Paper Science and Technology at NC State from 1990 to 2005. He has been working as a Professor Emeritus at NC State since 2005, and as a Special Professor at Nanjing Forestry University from 2006 to 2011. Dr. Chang has a total of 8 US patents, 20 book chapters, 3 books as editor roles, and over 230 peer-reviewed publications. Dr. Chang has been a Fellow of the International Academy of Wood Science since 1982, and a TAPPI Fellow since 1999. He received the APPI Research and Development Division Award and H. Aiken prize in 1992, the Notable Achievement Award of ISWFPC in 2007 and the Meritorious Achievement Award in 2024 from the 2nd International Lignin Symposium of Japan Lignin Society. He was awarded the Watauga Medal, the highest non-academic award, in 2010 for his significant contributions to the North Carolina State University after his retirement. As a professor at NC State, Dr. Chang has dedicated considerable time and support to students at the undergraduate, graduate, and doctoral levels. He has supervised over 75 graduate students and mentored more than 40 visiting scholars and postdoctoral fellows. Dr. Chang has made significant contributions to wood chemistry and technology, establishing himself as a distinguished scientist, educator, mentor and true friend to all his students, colleagues, and collaborators globally.

Notable Achievement Award

Prof. Yuji Matsumoto

Prof. Yuji Matsumoto is a Professor Emeritus at The University of Tokyo. He obtained his B.S. (1978) in Forest Product, M.S. (1980) and Ph.D. (1983) degrees specialized in the chemical structure of lignin from The University of Tokyo. Dr. Matsumoto joined the Wood Chemistry Laboratory at The University of Tokyo as a faculty member in 1985. Dr. Matsumoto's group is recognized for its work on quantitative structure - activity relationships (QSAR) of lignin and polysaccharides, development of wood solvent system and its application to the basic cell wall chemistry, the stereo chemistry and reactivity of β-O-4 structures in lignin, pulping and bleaching chemistry, co-oxidation between lignin and carbohydrate, and the role of lignin and plant cell wall in the carbon cycle on earth. He received the Award of Japan Wood Research Society for the development of Ozonation method for the analysis of lignin structure in 1995. He also served as the Adjunct Professors from different universities, including Nanjing Forestry University (2007), Zhejiang Sci-Tech University (2007), and Zhejiang A & F University (2014) in China, and Asian Institute of Technology (2010) in Thailand. He was also appointed as the Vice-Dean of the Graduate School of Agricultural and Life Sciences at The University of Tokyo in 2013. He has been working as a Professor Emeritus at The University of Tokyo since 2019. Dr. Matsumoto has over 131 peer-reviewed publications in English and 20+ review articles and book chapters in Japanese. Dr. Matsumoto has been a Fellow of the International Academy of Wood Science since 2002.

Committees

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Claudia Crestini	*University of Venise, Italy*
Hasan Jameel	*NC State University, USA*
John Ralph	*University of Wisconsin, USA*
Orlando Rojas	*University of British Columbia, Canada*
Thomas Rosenau	*BOKU University, Austria*
Anna Sundberg	*Abo Akademi University, Finland*
Tomoya Yokoyama	*The University of Tokyo, Japan*

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Daniel Saloni	*NC State University, USA*
Lokendra Pal	*NC State University, USA*
Ronalds Gonzalez	*NC State University, USA*
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Ting-Feng Yeh	*NC State University, USA*
Janice Sitzes	*NC State University, USA*

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Ewellyn Capanema	*RISE, Sweden*
Carlos Ariel Cardona	*Universidad Nacional de Colombia sede Manizales, Colombia*
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Joon Weon Choi	*Seoul National University, Korea*
Claudia Crestini	*Ca' Foscari University of Venice, Italy*
Thomas Elder	*USDA Forest Service, Southern Research Station, USA*
Yaseen Elkasabi	*USDA Agricultural Research Service, USA*
Evelyn Evelyn	*University of Riau, Indonesia*
Dmitry Evtuguin	*University of Aveiro, Portugal*
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John Kadla	*Suzano, Canada*
Dipti Kamath	*Oak Ridge National Laboratory, USA*
Haruo Kawamoto	*Kyoto University, Japan*
D. Steven Keller	*Miami University, USA*
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Michael Paleologou	*FPInnovations, Canada*
Xuejun Pan	*University of Wisconsin-Madison, USA*
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Soledad Peresin	*Auburn University, USA*
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Yunqiao (Joseph) Pu	*Oak Ridge National Laboratory, USA*
Orlando Rojas	*University of British Columbia, Canada*

Thomas Rosenau	*BOKU University, Austria*
Bonwook Koo	*Kyungpook National University, Korea*
Fabrice Roussiere	*FPInnovations, Canada*
William (Joe) Sagues	*NC State University, USA*
James Sheehan	*University of Alabama, USA*
Run-Cang Sun	*Dalian Polytechnic University, China*
Anna Sundberg	*Åbo Akademi University, Finland*
Yoshikuni Teramoto	*Kyoto University, Japan*
Toshiaki Umezawa	*Kyoto University, Japan*
Jack Wang	*NC State University, USA*
Feng Wang	*Dalian Institute of Chemical Physics, China*
Tatsuhiko Yamada	*Forestry and Forest Products Research Institute, Japan*
Qiang Yang	*Michigan State University, USA*
Tomoya Yokoyama	*University of Tokyo, Japan*
Chang Geun Yoo	*State University of New York – Environmental Science and Forestry, USA*
Yue Yuan	*Oak Ridge National Laboratory, USA*
Junyong Zhu	*USDA Forest Products Laboratory, USA*

Volunteers - North Carolina State University

Myeong Rok Ahn
Mirela Artner
Edgar Carrejo
Seong-Min Cho
Hyolee Choi
Shaikat Chandra Dey
Camilo Ramos Escobar
Jhonny Poveda Giraldo
Maria Gonzalez
Jose Gonzalez- Aguirre
Karuna Nambi Gowri
Jiawei Huang
Md. Nazrul Islam
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Jong-Chan Kim
Mariana Lendewig
Isabel Dorado Lasso
Isabel Enriquez Medina
Jannatun Nayeem
Aakash Upadhyay
Maria Camila Garcia Vallejo
Qiaoqiao Ye

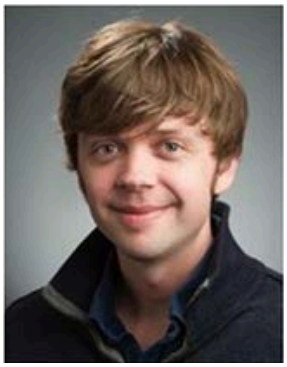
Plenary Speakers

Plenary speaker #1	**Yuji Matsumoto** *University of Tokyo, Japan*	Understanding the SAR (Structure-Activity Relationship) of Lignin - Recent Advancement
Plenary speaker #2	**Seong Kim** *Pennsylvania State University, USA*	Multiscale Assembly of Cellulose: Advancing Spectroscopic Characterization for Structure-Property Relationships of Cell Walls
Plenary speaker #3	**Orlando J. Rojas** *University of British Columbia, Canada*	Water and Gelation: Advancing Green Technologies Based on Wood-based Colloids
Plenary speaker #4	**Gregg T. Beckham** *National Renewable Energy Laboratory, USA*	Advances in Process Development for Lignin-first Biorefining
Plenary speaker #5	**Antje Potthast** *University of Natural Resources and Life Sciences, Austria*	Cellulose and Lignin - Advancing Analytical Methodology for Lignocellulosics

Yuji Matsumoto

Seong Kim

Orlando J. Rojas



Gregg T. Beckham

Antje Potthast

Program at a glance

	Monday, June 2	Tuesday, June 3	Wednesday, June 4	Thursday, June 5	Friday, June 6
	Registration (08:30 - 19:00)	Registration (07:30 - 19:00)	Help desk (08:00 - 17:00)	Help desk (08:00 - 17:00)	
08:30		Opening ceremony	Plenary speaker #2	Plenary speaker #4	Forest Biomaterials Department Tour (08:30-10:10)
09:00	Pre-symposium Lignin structure, biosynthesis & reactions • Lignin structure & heterogeneity • Lignification of cell walls • Reactions of lignin under acidic & alkali conditions				
09:30		Plenary speaker #1	Plenary speaker #3	Plenary speaker #5	
10:00		Coffee break (10:00-10:30)			
10:30		Session 1 KRAFT *3285*, AM *3222*, CW *4140*	Session 4 BP *3285*, CELL *3222*, LIG *4140*	Session 7 BP *3285*, CELL *3222*, LIG *4140*	NC State Centennial Campus Tour (10:20-12:20)
11:00					
11:30					
12:00	Lunch	Lunch (12:10-13:30)			
12:30					
13:00	Pre-symposium Lignin analysis • Purification, fractionation & separation • Direct analysis of processing liquid • Wet-chemical, chromatographic & spectroscopic analysis • Fast analytical approaches & chemometrics				
13:30		Session 2 KRAFT *3285*, AM *3222*, CW *4140*	Session 5 BP *3285*, CELL *3222*, LIG *4140*	Session 8 BP *3285*, CELL *3222*, LIG *4140*	
14:00					
14:30					
15:00		Coffee break (15:10-15:40)			
15:30		Session 3 KRAFT *3285*, AM *3222*, LIG *4140*	Session 6 BP *3285*, CELL *3222*, LIG *4140*	Session 9 BP *3285*, CELL *3222*, LIG *4140*	
16:00					
16:30					
	Reception (17:00-19:00)	Banquet (18:00-20:30)	Poster & Reception (17:00-19:00)	Closing ceremony (17:00-17:30)	

AM : Analytical methods
CW : Cell wall and lignin chemistry
KRAFT : Kraft pulping and bleaching
BP : Biorefinery development
CELL : Cellulose product development
LIG : Lignin product development
**Room number in Italic*

09:00 - 09:50	**Section 1**	**Lignin Structure, Biosynthesis & Reactions** NC State University Team • Lignin structure & heterogeneity • Lignification of cell wall • Reactions of lignin under acidic & alkali conditions
09:50 - 10:00	Break	
10:00 - 10:50	**Section 2**	
10:50 - 11:00	Break	
11:00 - 11:50	**Section 3**	
11:50 - 13:00	Lunch	
13:00 - 13:50	**Section 4**	**Lignin Analysis with Various Techniques** BOKU University Team • Purification, fractionation & separation • Direct analysis of processing liquid • Wet-chemical, chromatographic & spectroscopic analysis • Fast analytical approaches & chemometrics
13:50 - 14:00	Break	
14:00 - 14:50	**Section 5**	
14:50 - 15:00	Break	
15:00 - 15:50	**Section 6**	
15:50 - 16:00	Break	
16:00 - 16:50	**Section 7**	
16:50 - 17:00	Break	
17:00 - 19:00	Reception	

: Room 3285 : Currituck/Hatteras Ballroom

Program (Tuesday, June 3)

08:30 - 09:15	Opening ceremony	
09:15 - 10:00	Plenary speaker #1 **Understanding the SAR (Structure-Activity Relationship) of Lignin - Recent Advancement** Yuji Matsumoto, *University of Tokyo*, Japan	Chair: Hasan Jameel
10:00 - 10:30	Coffee Break	

Session 1

Chairs	Runkun Sun — *SAPPI, USA*	Yoshikumi Teramoto — *Kyoto Univ., Japan*	Biljana Bujanovic — *USDA-FS-Forest Products Lab., USA*
10:30 - 10:55	KRAFT-01 Liam Ryan — **White Liquor Sodium Carbonate Effects on the Pulping of Southeastern Softwood** — *Smurfit Westrock, USA*	AM-01 Oliver Musl — **What Do We Know About the Structure and Composition of Technical Lignins?** — *BOKU University, Austria*	CW-01 Thomas Elder — **Density Functional Theory Calculations of the Antioxidant Properties of Lignin-Carbohydrate Complexes** — *USDA-Forest Service, Southern Research Station, USA*
10:55 - 11:20	KRAFT-02 Nayara Casagrande — **Influence of the Kappa Number of Southern Softwood Kraft Pulps on the Strength Properties of Sack Kraft Paper** — *Klabin S/A, Brasil*	AM-02 Keiichiro Takeuchi — **Revisiting Conventional Lignin Analyses** — *Hokkaido University, Japan*	CW-02 Haruo Kawamoto — **Thermal Reactivity of Constituent p-Polymers in Wood Cell Walls** — *Kyoto University, Japan*
11:20 - 11:45	KRAFT-03 Carolina Marion de Godoy — **Kraft Cooking of Nordic Hardwoods: Comparison Between Delignification Profiles and Microstructural Changes** — *Chalmers University of Technology, Sweden*	AM-03 Sara Filippa Ludvig — **Linkage Sequences in Lignin Populations (LILIPOPS): Case study of spruce milled wood lignin** — *KTH Royal Institute of Technology, Sweden*	CW-03 Ting-Feng Yeh — **Characterization and Distribution of Ma Bamboo Heteroxylan and the Biosynthetic Activity of its Xylan Backbone** — *NC State University, USA*
11:45 - 12:10	KRAFT-04 Esty Sari — **The Role of Lapachol in Enhancing β-O-4 Lignin Model Decomposition under Alkaline Cooking Conditions** — *University of Riau, Indonesia*	AM-04 Md Sarwar Jahan — **Method for Rapid Determination of Hexeneuronic Acid in Non-Wood Pulp by Multivariate Analysis of FT-NIR Spectroscopic Data** — *Bangladesh Council of Scientific and Industrial Research, Bangladesh*	CW-04 Toshihiro Komatsu — **Study on the Stability of Condensed Lignin Model Dimers under Acidolysis Conditions** — *University of Tokyo, Japan*
12:10 - 13:30	Lunch		

Session 2

Chairs	Liam Ryan — *Smurfit Westrock, USA*	Joon Weon Choi — *Seoul Nat. Univ., South Korea*	Kwang Ho Kim — *Univ. of British Columbia, Canada*
13:30 - 13:55	KRAFT-05 Linus Kron — **Revisiting Kraft Delignification – Modelling the Heterogenous Removal of Lignin at the Cell Wall Level** — *Chalmers University of Technology, Sweden*	AM-05 Shoichi Sato — **QCM-D as a Powerful Tool to Analyze Lignification p-Process in Vitro** — *Hokkaido University, Japan*	CW-05 Biljana Bujanovic — **Stabilizing β-O-4 bonds using lignin-based phenolic nucleophiles under autohydrolytic conditions** — *USDA-FS-Forest Products Lab., USA*

13:55 - 14:20	KRAFT-06 Eashwara Raju Senthikumar **Effect of Storage Conditions on the Brownstock Washing and Oxygen Delignification** *KTH Royal Institute of Technology, Sweden*	AM-06 Irina Sulaeva **Advanced Cross-Sectional Analysis of Cellulose Fibers** *BOKU University Vienna, Austria*	CW-06 Shin Tanahashi **Electrolysis of Artificial Lignin in Various DES** *Kyoto University, Japan*
14:20 - 14:45	KRAFT-07 Auphelia Burnet **Lower Environmental Impact During an ECF Bleaching Sequence** *Centre technique du papier, France*	AM-07 Maria Gonzalez **Revealing Cellulose Fiber-Water Interactions Using Vibrational Spectroscopy to Enhance Dewatering and Bonding Properties** *NC State University, USA*	CW-07 Tomoya Yokoyama **Acidolytic β-O-4 Bond Cleavage of Syringyl Type Lignin Model Compound and its Comparison with Guaiacyl Type Analogue** *University of Tokyo, Japan*
14:45- 15:10	KRAFT-08 Alexis Metais **Ozone Bleaching Integration Benefits for Pulp Mills** *Xylem, France*	AM-08 Yoshikuni Teramoto **Quantitative Prediction of Latent Deterioration in Waterborne Coatings for Wood Using ATR-FTIR and Machine Learning** *Kyoto University, Japan*	CW-08 Jack Wang **Reimaging Plant Cell Wall Lignification** *NC State University and TreeCo, USA*
15:10 - 15:40	Coffee Break		
	Session 3		
Chairs	Kai Lan *NC State Univ., USA*	Aoki Dan *Nagoya Univ., Japan*	Hasan Jameel *NC State University, USA*
15:40 - 16:05	KRAFT-09 Francesca Gullo **Lignin Modification for Wood and Pulp Bleaching by Improving Hydrogen Peroxide Efficiency at Room Temperature** *Politecnico di Torino, Italy*	AM-09 Leo Lebanov **Development of Benchtop and Process Analytical Technology for Comprehensive Production Monitoring of Bio-Based Solvents** *University of Tasmania, Australia*	LIG-01 Robert Narron **Perspectives and Reflections on the Borregaard Biorefinery** *Borregaard, USA*
16:05 - 16:30	KRAFT-10 Joe Sagues **Decarbonizing Lime Kilns via Oxy-Fuel Calcination** *NC State University, USA*	AM-10 Luisa Scolari **Comparative Mechanical and Chemical Analysis of Technical Lignin to be Applied in Lignocellulosic Biocomposites** *TU Wien, Austria*	LIG-02 Hou-Min Chang **My Lifelong Fun with Lignin Research** *NC State University, USA*
16:30 - 16:55	KRAFT-11 Sebastian España Orozco **Interactions of Pulp Mill Components with Lipases for Pitch Control** *WOOD Kplus - Kompetenzzentrum Holz GmbH, Austria*	AM-11 Panagiota Rigou **Periodate-Chlorite Oxidation of Cellulose: Challenges and Insights** *Grenoble INP, France*	
18:00 - 20:30	Banquet		

: Piedmont-Mountains Ballroom : Room 3285 : Room 3222 : Room 4140

Program (Wednesday, June 4)

08:30 - 09:15	**Plenary speaker #2** **Multiscale Assembly of Cellulose: Advancing Spectroscopic Characterization for Structure-Property Relationships of Cell Walls** Seong Kim, *Pennsylvania State University*, USA	Chair: Sunkyu Park
09:15 - 10:00	**Plenary speaker #3** **Water and Gelation: Advancing Green Technologies Based on Wood-based Colloids** Orlando J. Rojas, *University of British Columbia*, Canada	Chair: Richard Venditti
10:00 - 10:30	Coffee Break	

Session 4

Chairs	Joe Sagues *NC State Univ., USA*	James Sheehan *Univ. of Alabama, USA*	Tomoya Yokoyama *Univ. of Tokyo, Japan*
10:30 - 10:55	BP-01 Edgar Carrejo **Analysis of Carbon Capture and Storage in the Pulp and Paper Industry Integrated with Nuclear Energy** *NC State University, USA*	CELL-01 Carson Meredith **Polyelectrolyte Complexation and Crosslinking Strategies to Mitigate Moisture Sensitivity of Cellulose-Based Packaging** *Georgia Tech, USA*	LIG-04 Kwang Ho Kim **Lignification-Inspired Synthesis of Diphenoquinone for Electrochemical CO_2 Capture** *University of British Columbia, Canada*
10:55 - 11:20	BP-02 Kai Lan **Life-Cycle Environmental Benefits of Sustainable Aviation Fuel Derived from Paper Sludge** *NC State University, USA*	CELL-02 Ouwen He **Translating Science into Sustainable Innovations for Cellulose-based Food Packaging** *Aalto university, Finland*	LIG-05 Hiroshi Nonaka **Can Unsaturated Compounds Prevent Lignin Condensation in Biomass Saccharification?** *Mie University, Japan*
11:20 - 11:45	BP-03 Hanne Wikberg **A Resource-Efficient Organosolv Biorefinery for Producing High-Quality Cellulose, Hemicellulose and Lignin** *Chempolis, Finland*	CELL-03 Xuefeng Zhang **Metal-Cation-Induced Hydrophobization of Cellulosic Materials for Sustainable Packaging** *University of Maine, USA*	LIG-06 Jong-Chan Kim **Effect of Structural Characteristics of Alkyl-Esterified Lignin on PVC Plasticization** *Seoul National University, South Korea*
11:45 - 12:10	BP-04 Xiaowen Chen **Enabling Sustainable Aviation Fuel Production from Corn Stover using Deacetylation and Mechanical Refining (DMR) Process** *National Renewable Energy Laboratory, USA*	CELL-04 Jorge Franco **Alternatives Non-Wood Fibers for Packaging Applications** *NC State University, USA*	LIG-07 Daisuke Ando **Mechanochemical Acetylation of Wood with Acidic and Basic Catalysts** *Akita Prefectural University, Japan*
12:10 - 13:30	Lunch		

Session 5

Chairs	Hoyong Kim *Korea Res. Inst. of Chem. Tech., South Korea*	Carson Meredith *Georgia Inst. of Tech., USA*	Xuefeng Zhang *Univ. of Maine, USA*
13:30 - 13:55	BP-05 Prajakta Dongre **Complete Valorization of Aspen Using Green High-Boiling Point Solvents – Enzymatic Hydrolysis and Organosolv Lignin** *University of Wisconsin-Madison, USA*	CELL-05 Zhulan Liu **Multi-Scale LNPs from Black Liquor as Repulpable Paper Coatings with Enhanced Water, Oil and Vapor Resistence** *Nanjing Forestry University, China*	LIG-08 Xianglan Bai **Upgrading Lignin for Sustainable Materials** *Iowa State University, USA*

13:55 - 14:20	BP-06 John Sanders **The Influence of Solvent Properties and Biomass Feedstock Characteristics on Deep Eutectic Solvent Pulping Performance** *NC State University, USA*	CELL-06 James Sheehan **Engineering Cellulosic Barrier Materials with Supercritical Carbon Dioxide** *University of Alabama, USA*	LIG-09 Daniel Barker-Rothschild **On the Development of Lignin-Based Porous Carbon: from Traditional to Emerging Approaches** *University of British Columbia, Canada*
14:20 - 14:45	BP-07 Jun Xu **The Greener Pulping Processes with High-Quality Pulp and Light-Colored Lignin by Deep Eutectic Solvent** *South China University of Technology, China*	CELL-07 Fatimatu Bello **Multifunctional and Sustainable Pectin-Tara Gum-Lignin Nanoparticle Films for Food Packaging** *Auburn University, USA*	LIG-10 Giorgio Tofani **Recyclable Lignin-Based Bisphenol A-free Epoxy Resins Containing Covalent Adaptable Network for Biomaterial Applications** *National Institute of Chemistry, Slovenia*
14:45- 15:10	BP-08 Chang Geun Yoo **Design and Application of Biomass-Derived Deep Eutectic Solvents for Sustainable Biorefineries** *State University of New York, USA*	CELL-08 Richard Venditti **Spinning Lyocell Fibers from Old Corrugated Container (OCC)** *NC State University, USA*	LIG-11 Jan Janesch **Unmodified Kraft Lignin as a Co-Reactant for Bio-Based Epoxy Resins** *BOKU University, Austria*
15:10 - 15:40	Coffee Break		
	Session 6		
Chairs	Xiaowen Chen *Nat. Renew. Energy Lab., USA*	Trevor Treasure *Eastman Chemical Company, USA*	Robert Narron *Borregaard, USA*
15:40 - 16:05	BP-09 Arulselvan Ponnudurai **LigniFrac: A Unified Process for Lignin Precipitation Fractionation and Solvent Recovery** *Max Planck Institute for Dynamics of Complex Technical Systems, Germany*	CELL-09 Weibing Wu **Green Packaging Materials with High Water Vapor Barrier Performance** *Nanjing Forestry University, China*	LIG-12 Nils Ortner **Development of Cyclocarbonated Lignin Prepolymers as Wood Adhesives** *Thünen Institute of Wood Research, Germany*
16:05 - 16:30	BP-10 Qi Nie **Pressurized Hot Water Extraction (PHWE) of Industrial Hardwood Waste Dust: Kinetics and Properties of Isolated Materials** *Åbo Akademi University, Finland*	CELL-10 Xuejun Pan **Functional Lignocellulosic Materials for Energy, Environment, and Packaging Applications** *University of Wisconsin-Madison, USA*	LIG-13 Dmitry Tarasov **Softwood Lignin for Bio-Based Adhesives Manufacture** *Åbo Akademi University, Finland*
16:30 - 16:55	BP-11 Junlong Song **Steam Explosion Technology for Sustainable Utilization of Agricultural Residues** *Nanjing Forestry University, China*	CELL-11 Lucian Lucia **An Industrially Relevant Copolymerization Platform for Cellulose Plastics** *NC State University, USA*	LIG-14 Leonardo Clavijo **Enhancing Phenol-Formaldehyde Adhesives with Eucalyptus Lignin: Advantages of Soda Lignin as an Extender** *Universidad de la República, Uruguay*
17:00 - 19:00	Posters & Reception		

: Piedmont-Mountains Ballroom : Room 3285 : Room 3222 : Room 4140 : Coastal Ballroom

Program (Thursday, June 5)

08:30 - 09:15	**Plenary speaker #4** **Advances in Process Development for Lignin-first Biorefining** Gregg T. Beckham, *National Renewable Energy Laboratory*, USA	Chair: Sunkyu Park
09:15 - 10:00	**Plenary speaker #5** **Cellulose and Lignin - Advancing Analytical Methodology for Lignocellulosics** Antje Potthast, *University of Natural Resources and Life Sciences*, Austria	Chair: Ting-Feng Yeh
10:00 - 10:30	Coffee Break	

Session 7

Chairs	Xuejun Pan — *Univ. of Wisconsin-Madison, USA*	Thomas Rosenau — *BOKU University, Austria*	Ewellyn Capanema — *RISE, Sweden*
10:30 - 10:55	BP-12 Jonghwa Kim **FDCA Production from Biomass via Glucaric Acid Pathway by Sequential TEMPO Oxidation and Recyclable Ionic Liquid** *Korea Research Institute of Chemical Technology, South Korea*	CELL-12 Ronalds Gonzalez **Nonwood Fibers in Hygiene Tissue Paper: Potential, Applications, and Challenges** *NC State University, USA*	LIG-15 Alaudini Nurali **3D Printing of Indoor Walls from Mixtures of Wood Particles with Bio-Adhesive Formulations Blended with Spent Sulfite Liquor** *Boku University, Austria*
10:55 - 11:20	BP-13 Rui Katahira **Production of High-Density Cyclic Hydrocarbons from Biomass-Derived Cyclopentanones through Aldol Condensation** *National Renewable Energy Laboratory, USA*	CELL-13 Trevor Treasure **The Role of Hemicelluloses in the Utilization of Dissolving Pulps** *University of Riau, Indonesia*	LIG-16 Dmitry Evtuguin **New Insights into Carboxymethylation of Eucalyptus Kraft Lignin: Structural Features and Metal Sorption Capacity** *University of Aveiro, Portugal*
11:20 - 11:45	BP-14 Zhouyang Xiang **Xylan-based Fine Chemicals via Hemicellulose-first Biorefining: A Sustainable Strategy to Decarbonize Paper Mills** *South China University of Technology, China*	CELL-14 Evelyn Evelyn **Development of Dissolving Pulp from Oil Palm Empty Fruit Bunches and Eucalyptus pellita for Sustainable Rayon Production** *University of Riau, Indonesia*	LIG-17 Hao Zhang **The Impact of Lignin Chemical Structures on the Morphological and Electrochemical Performance of its Hard Carbon** *Åbo Akademi University, Finland*
11:45 - 12:10	BP-15 Karthik Mani **Fusion of AI and Chemistry: Advancing Renewable Materials Innovation Through Integrated Biorefinery Systems** *NC State University, USA*	CELL-15 Phoenix Tiller **Quantifying the Impact of Fines Content, Activation, and Sulfuric Acid Catalyzation on Cellulose Acetate Quality** *NC State University, USA*	LIG-18 Andrea Marangon **Porous Biopolymers for the Removal of Pollutants Obtained from Bamboo Culms (Phyllostachys Edulis)** *Università del Piemonte Orientale, Italy*
12:10 - 13:30	Lunch		

Session 8

Chairs	Yunqiao Pu — *Oak Ridge Nat. Lab., USA*	Richard Venditti — *NC State Univ., USA*	Ting-Feng Yeh — *NC State Univ., USA*
13:30 - 13:55	BP-16 Amélie Lefèvre **Upcycling of Recycled Kraft Fibers – Use of Ozone to Restore Fiber-Bonding Ability to Fight the Hornification Phenomenon** *Univ. of Grenoble Alpes, France*	CELL-16 Soojin Kwon **Aerobic Aquatic Biodegradation of Wood-Based Materials: Key Factors for Biodegradability** *Gyeongsang National University, South Korea*	LIG-19 Tatsuhiko Yamada **Glycol Lignin Production and Glycol lignin-based Functional Materials** *Forestry and Forest Products Research Institute, Japan*

13:55 - 14:20	BP-17	Alicia Teston	**Biorefinery Integrating in Paper Recycling: Extraction, Characterization and Valorization of Recycled Starch** *Univ. of Grenoble Alpes, France*	CELL-17	Eero Kontturi	**Exposing Cellulosic Fibers to Hydrogen Chloride gas: Differences in Outcome** *Aalto University, Finland*	LIG-20	Hasan Jameel	**Production of Lignin Micro- and Nanoparticles in Aqueous Suspensions by Solvent Fractionation** *NC State University, USA*
14:20 - 14:45	BP-18	Jiayun Xu	**Insight into Lignin Properties for Carbohydrate-First Fractionation Process from Spruce Heartwood and Sapwood** *Åbo Akademi University, Finland*	CELL-18	Mariana Lendewig	**Non-Woody Biomass: A Breakthrough in Non-Dissolution Production of Man-Made Cellulosic Fibers** *NC State University, USA*	LIG-21	Yongcan Jin	**Lignin Bioactivity and its Application in Agriculture and Biomedicine** *Nanjing Forestry University, China*
14:45- 15:10	BP-19	Soumen Saha	**Valorization of Spent Liquor from Non-wood (Wheat Straw) Sulfite Pulping** *NC State University, USA*	CELL-19	Aakash Upadhyay	**Enhancing Barrier Properties by Modulating Wood Fiber Structure and Elasticity Through Mechanical Modification** *NC State University, USA*	LIG-22	James Sheehan	**Glycerol-derived H-Donating Solvents for Catalytic Transfer Hydrogenolysis of Lignins** *University of Alabama, USA*
15:10 - 15:40	Coffee Break								
Session 9									
Chairs	Yucheng Peng *Auburn Univ., USA*			Eero Kontturi *Aalto Univ., Finland*			Lucian Lucia *NC State Univ., USA*		
15:40 - 16:05	BP-20	Sunkyu Park	**Biographite Production from Biomass and its Economic Assessment** *NC State University, USA*	CELL-20	Richard Venditti	**From Byproduct to Functional Finish: Upgrading Cottonseed Oil for Textile and Paper Applications** *NC State University, USA*	LIG-23	Xuanjun Jin	**Lignin-Based Shape-Memory Non-Isocyanate Polyurethane Foams with Castor Oil** *Seoul National University, South Korea*
16:05 - 16:30	BP-21	Marco Bassani	**Industrial Bark: A Promising Versatile Raw Material For The Biorefinery** *Umeå University, Sweden*	CELL-21	Abdelghani Boussetta	**Formulation of Chitosan-Corn Starch-Mimosa Tannin Wood Adhesives: A Path** *Sultan Moulay Slimane University, Morocco*	LIG-24	Rodrigo Coniglio	**Structural Insights into Ammoxidized Kraft Lignins: A Strategic Approach to Amide Nitrogen-Enrichment for Growing Media** *University of Hamburg, Germany*
16:30 - 16:55	BP-22	Wajeeha Munib	**Valorization of Stilbene Glucoside Clusters from Wood Bark and Sawdust** *Aalto University, Finland*	CELL-22	Florian Mayer	**Impact of TEMPO Mediated Oxidation Before and After Cellulose Nanocrystal Fabrication via Hydrochloric Acid Vapour Hydrolysis** *Aalto University, Finland*	LIG-25	Jiae Ryu	**Synthesis of Lignin-Polystyrene Copolymer from Forest Residues: A Case Study with Ponderosa Pine** *State University of New York, USA*
17:00 - 17:30	Closing Ceremony								

: Piedmont-Mountains Ballroom : Room 3285 : Room 3222 : Room 4140 : Coastal Ballroom

Program (Friday, June 6)

08:30 - 10:10	**Forest Biomaterials Department Tour**	• Pulping Lab and SAFI Consortium (Hasan Jameel, Ronalds Gonzalez) • Paper Making & Pilot Plant (Lokendra Pal) • Polymer Processing Lab (Richard Venditti) • Wood Chemistry & Analytical Equipment (Ting-Feng Yeh) • Biographite for Battery Application (Sunkyu Park)
10:20 - 12:20	**NC State Centennial Campus Tour**	• The Nonwovens Institute (Daniel Saloni) • Analytical Instrumentation Facility (Richard Venditti) • James B. Hunt Jr. Library (Hasan Jameel)

: Pulp and Paper Laboratories, Hodges Wood Products Lab : Centennial Campus

Pre-registration is required to participate in the tour program.

James B. Hunt Jr. Library

Kraft Pulping and Bleaching

POS-01 **Advancing Oxygen Delignification by Exploring Process Limits Through Iterative Steps and High-Shear Mixing**
Jenny Sjöström — *KTH Royal Institute of Technology, Sweden*

POS-02 **Comparison of Kraft Pulp Properties and Bleachability Between Acacia and Eucalyptus Woods in Indonesia Plantation**
Dian Apriyanti — *Tokyo University of Agriculture and Technology, Japan*

POS-03 **Exploring Redox Properties of Natural Lapachol from Indonesian Teak Sawdust as a Sustainable Additive for Alkaline Cooking**
Esty Sari — *University of Riau, Indonesia*

POS-04 **Quantitative Characterization of Organic and Inorganic Components in Kraft Black Liquor**
Myeong Rok Ahn — *NC State University, USA*

Biorefinery Development

POS-05 **Sulfite Pulping of Non-Wood: An Integrated Approach for Sustainable Fiber Utilization**
Jannatun Nayeem — *NC State University, USA*

POS-06 **The Effect of Lignosulfonate Analogues on Enzymatic Saccharification of Green Liquor Pretreated Poplar**
Junlong Song — *Nanjing Forestry University, China*

POS-07 **Investigation of Non-wood Materials for Pulping and Fiber Applications**
Hao-Chen Sun — *NC State University, USA*

POS-08 **Waste Wood Utilization Yielding Modified, Protected and Purified Lignin**
Stefan Grasböck — *Boku University, Austria*

POS-09 **Regulation of Lignocellulolytic Enzyme Expression in Trametes Versicolor Under Nitrogen and Carbon Starvation Conditions**
Taichi Motoda — *Akita Prefectural University, Japan*

POS-10 **Advanced Hydrothermal Pretreatment Based Biorefinery Toward Improved Sugar and Lignin Recovery**
June-Ho Choi — *Korea Research Institute of Chemical Technology, South Korea*

POS-11 **Hemicellulose Recovery Through Oxidative Extraction**
Lucas de Azambuja — *Chalmers, Sweden*

POS-12 **Bioplastic from Corn Stover: Life Cycle Assessment and Artificial Intelligence-Based Analysis of Uncertainty and Variability**
Yinqiao Wang — *NC State University, USA*

POS-13 **Vapor Stripping-Vapor Permeation for the Recovery of Butanol from Aqueous Systems**
J. Gavin Gaynor — *NC State University, USA*

POS-14 **Innovative Fractionation of Biomass with Maleic acid / n-Butanol Co-Solvent System**
Takumi Yamada — *Mie University, Japan*

POS-15 **A Biorefinery Strategy Utilizing Agriculture Residues for Alternative Fuels and Biomaterial Applications**
Nara Han — *State University of New York, USA*

POS-16 **Affordable Technology for the Pulp & Paper Industry: The Case of Hydrophilic and Hydrophobic Deep Eutectic Solvents**
Jhonny Poveda Giraldo — *NC State University, USA*

POS-17 **Effective Polyhydroxybutyrate Extraction Using Green Deep Eutectic Solvents**
Jiae Ryu — *State University of New York, USA*

POS-18 **Process Design and Techno-Economic Analysis for the Production of Bio-Based Graphite and Liquid Hydrocarbons**
Jose Gonzalez-Aguirre *NC State University, USA*

POS-19 **New Approach to Improve Economic and Environmental Biomethane Production with Biomass Gasification with CO_2 Sorbents**
Maria Camila Garcia Vallejo *NC State University, USA*

POS-20 **Life Cycle Assessment of Negative Carbon Sustainable Aviation Fuels from Paper Sludge**
Jiawei Huang *NC State University, USA*

POS-21 **Hemical Signatures and Material Properties of Tree Species Naturally Growing in Mongolia**
Gunbileg Disan *BOKU University, Austria*

POS-22 **Aromatic Monomer Production Through Pyrolysis-Assisted Catalytic Conversion**
Haruo Kawamoto *Kyoto University, Japan*

POS-23 **Structural Characterization of Bark Lignin of Japanese Cedar (Cryptomeria Japonica) Wood Stem**
Takuya Akiyama *University of Tokyo, Japan*

POS-24 **Eco-Friendly Flexible Veneer Production: Combining Steam-Delignified Wood Veneers with Biodegradable Plastic Sheets**
Se-Yeong Park *Kangwon National Univeristy, South Korea*

POS-25 **Influence of Formic Acid Ratio on the Oxidation of Furfural to Dicarboxylic Acids**
Jonghwan Choi *Seoul National University, South Korea*

POS-26 **Plasticizer for Biodegradable Polymer Derived from Lignocellulosic Biomass**
Young-Min Cho *Seoul National University, South Korea*

POS-27 **Valorizing Shrimp Shell Waste: Development of Particleboards using Phosphorylated Chitin**
Abdelghani Boussetta *Sultan Moulay Slimane University, Morocco*

POS-28 **Rotten Wood-derived Porous Carbon for Supercapacitor Applications**
Weipeng Zhang *University of New Brunswick, USA*

POS-29 **Iron-based Catalytic Bio-Graphitization: A Detailed Mechanistic Insight Utilizing In-situ XRD and PALS**
Md. Nazrul Islam *NC State University, USA*

POS-30 **Scalable Production of Biographite Anode from Pyrolysis Oil for Lithium-Ion Batteries**
Shaikat Chandra Dey *NC State University, USA*

POS-31 **Soil Nutrient Management in Legacy Mine Sites and a Minimum Data Set Approach: A Case Study of Marion County, WV**
Debsree Mandal *NC State University, USA*

POS-32 **Bioenergy Cropping Systems on Marginal Lands: Impacts of Land Use, Energy Crop, and Fertility Amendments on Soil Health**
Mica Keck *NC State University, USA*

POS-33 **Chemical Upcycling of Plastic via Nitric Acid Process Design and Simulation**
Juan Martin Rodao Aicardi *NC State University, USA*

POS-34 **Techno-Economic Analysis of Ammonium Sulfite Pulping of Alternative Fibers for Market Pulp Production**
Yefrid Cordoba Ortiz *NC State University, USA*

POS-35 **Exploring Non-Wood Fibers in Tissue Applications: Creping Trials for Enhanced Tissue Paper Performance**
Fernando Urdaneta *NC State University, USA*

Analytical Methods

POS-36 **Simple and Fast Analysis of Lignin and Hemicelluloses in Kraft Black Liquor**
Margaritha Ritscher *BOKU University, Austria*

POS-37 **Optimizing Size Exclusion Chromatography for Lignin Analysis: Evaluating Mobile Phases, Standards, and Detection Systems**
John Chrysostom Opedun *University of Vienna, BOKU University, Austria*

POS-38 **Microscopic Quantification of Lignin Precursors in the Differentiating Xylem by a Cryo-Microdissection**
Dan Aoki *Nagoya University, Japan*

POS-39 **Cellulase Enzyme Formulation Screening for Use in New Textile PET/Cotton Blend Separation Method**
Jean Egan *University of Applied Sciences Wiener Neustadt, Austria*

POS-40 **Evaluation of Fibre Frictional Forces for Sisal Fibers in a Wet-Laid System**
Karuna Nambi Gowri *NC State University, USA*

POS-41 **Application of the Biosolvent 'CyreneTM' in the Quantitative Analysis of Residual Solvents in Pharmaceuticals using HS-GC-MS**
Leo Lebanov *University of Tasmania, Australia*

Cellulose Product Development

POS-42 **Strength Development of Molded Pulp Products by Biobased Materials**
Jung Myoung Lee *Kyungpook National University, South Korea*

POS-43 **Technical Lignin and Black Wattle Tannin based Polyurethanes as Paper Coating**
Julia De Cristo Figueiredo *Universidade Federal Rural do Rio de Janeiro, Brazil*

POS-44 **Alternatives Non-wood Fibers for Packaging Applications**
Jorge Franco *NC State University, USA*

POS-45 **Steam-Exploded Cotton Stalks for Animal Feed and Desert Management**
Junlong Song *Nanjing Forestry University, China*

POS-46 **Cyanoethyl Cellulose Reinforced Polymerizable Deep Eutectic Solvent Gel Electrolytes for Sodium Ion Battery**
Zhichen Ba *Åbo Akademi University, Finland*

POS-47 **Enhancing Porosity in Cellulose Nanofiber-Based Lithium-Ion Battery Separators through the Introduction of Silica Spacers**
Bonwook Koo *Kyungpook National University, South Korea*

POS-48 **Dissolving Pulp Production from Bleached Eucalyptus Kraft Pulp using Cold Caustic Extraction (CCE)**
Viviana Palombo *Universidad de la República, Uruguay*

POS-49 **Microfibrillated Cellulose Beads Using Low-Temperature Dissolution, Various Raw Materials and Acid Coagulation Baths**
Duber Garces *Auburn University, USA*

POS-50 **Synthesis and Characterization of TCNF/Chitosan Aerogels for Removal of Emerging Contaminants**
Daniel Owusu Sekyere *Wildlife and Environment Auburn University, USA*

POS-51 **Efficient Synthesis and Application of Octyl Glucoside**
Yunfeng Cao *Nanjing Forestry University, China*

POS-52 **Extrusion Molding of Biomass Powder with Carboxymethyl Cellulose**
Hiroshi Nonaka *Mie University, Japan*

POS-53 **Zero-order Reactions Preceding the Pyrolytic Depolymerization of Cellulose**
Haruo Kawamoto *Kyoto University, Japan*

POS-54 **Biocarbon from Lignocellulosic Materials for Lead Ion (Pb^{2+}) Adsorption**
Yucheng Peng *Auburn University, USA*

POS-55 **Epoxidized Cottonseed Oil for Sustainable Textile Finishing: Enhancing Cotton Fabric Performance with Bio-Based Modifications**
Taylor Kanipe *NC State University, USA*

POS-56 **Synthesis of in-situ AgNP-Incorporated Cellulose Acetate Sulfate without Reducing Agents, AgO_2 Accelerators, Heat, and Light**
Seong-Min Cho *NC State University, USA*

POS-57 **Fiber Spinning and Industrial Composting of PLA Fibers: How the Type of PLA Impacts Biodegradability**
Jose Fernandez *NC State University, USA*

Cell Wall and Lignin Chemistry

POS-58 **Environmental Life Cycle Analysis of Genetically Modified Fraser Fir Christmas Trees in NC**
Jonathan Morizet-Davis *NC State University, USA*

POS-59 **Innovative Nano-Sawdust Composites for Sustainable Thermal Insulation**
Man Liu *State University of New York, USA*

POS-60 **Enhanced Electrical Performance of Moisture Diffusion Energy Harvesting Devices Utilizing Metal-Doped Lignin Biochar**
Hyeonoh Hwang *Seoul National University, South Korea*

POS-61 **Semi-Chemical Pulping Methods for High-Yield Pulp: Evaluation of Product Yield, Energy Consumption and CO2 Emissions**
Nikolai Ponomarev *Aalto University, Finland*

POS-62 **Guaiacy-Syringyl Lignin Formation Mechanism Revealed by Copolymerization of Coniferyl and Sinapyl Alcohols**
Takao Kishimoto *Kyoto University, Japan*

POS-63 **Measurements of Single Molecular Affinity Interactions Between Carbohydrate-Binding Modules and Lignins**
Shufang Wu *Nanjing Forestry University, China*

POS-64 **NMR Results Highlighting 35 Years of Research in FPL**
Sally Ralph *USDA-Forest Product Laboratory , USA*

Lignin Product Development

POS-65 **Fabrication of Hydrophobic Lignin-Based Films through Tandem Chemical Modification and Plasma Treatment**
Kwang Ho Kim *University of British Columbia, Canada*

POS-66 **Lignin-Modified Cellulose Nanofibers with Excellent Adhesion, Self-Healing and Anti-Freeze Properties**
Linli Qin *Nanjing Forestry University, China*

POS-67 **A Gravel-Like Lignin Catalysts Based on Controllable Self-Assembly of Double Polyphenol-Metal-Network for Water Purification**
Yanchen Zhu *Nanjing Forestry University, China*

POS-68 **Direct Preparing Mesoporous-Dominated Porous Carbon for Supercapacitors from Precipitated Kraft Lignin**
Guolin Tong *Nanjing Forestry University, China*

POS-69 **Study on the Relationship Between Lignin Structure and Antioxidant Properties**
Wenjuan Wu *Nanjing Forestry University, China*

POS-70 **Performance of PEO/Lignin and PAA/Lignin Nanofibers Fabricated by Electrospinning**
Jung Myoung Lee *Kyungpook National University*, South Korea

POS-71 **Advancing Sustainable Multifunctional Bio-Rubber Panels for Construction Using Lignin and Natural Devulcanized Rubber**
Tina Rocnik Kozmelj *National Institute of Chemistry, Slovenia*

POS-72 **Lignin Valorization Using Lignin Degrading Bacillus Spp.**
Niranjan Patil *Bharatiya Vidya Bhavans College Andheri West, India*

POS-73 **Lignin Derivatives for Cancer Treatment: Structural Modifications and Therapeutic Effects**
Yilin Wang *Nanjing Forestry University, China*

POS-74 **Nanoencapsulation of a Generic Pesticide by Lignin Precipitation**
Qiaoqiao Ye *NC State University, USA*

POS-75 **Catalytic Carbonization of Lignin with Different Molecular Weights Using Fe Catalyst**
Jong-Chan Kim *NC State University, USA*

POS-76 **Utilization of Softwood Kraft Lignin for Cation-Exchange Resin Production**
Hyolee Choi *NC State University, USA*

POS-77 **Enhanced Functionalization of Kraft and Milled Wood Lignin via Phenolation and Synthesis Technique Biomedical Applications**
Azma Fakhar *Seoul National University, South Korea*

POS-78 **Enzymatic Lignin from the Saccharification of Steam-Exploded Eucalyptus Globulus Bark: Isolation and Characterization**
Sandra Magina *CICECO - University of Aveiro, Portugal*

POS-79 **Unlocking Lignin's Potential: Optimizing Depolymerization, Kinetic Modeling and Unveiling the Role of Isolation Strategies**
Tina Rocnik Kozmelj *National Institute of Chemistry, Slovenia*

POS-80 **Vanillin Production from Technical Lignin in Highly Alkaline Hydrogen Peroxide Oxidation with Possible Practical Installation**
Tomoya Yokoyama *University of Tokyo, Japan*

POS-81 **Physical and Chemical Properties of Lignin Derivatives by Acid-Catalyzed Solvolysis in Caprylyl Glycol**
Tomohiro Yamada *University of Tsukuba, Japan*

POS-82 **Preparation and Characterization of Lignin Derivatives by Acid-Catalyzed Solvolysis Using PEG1000/Glycerol Mix Solvent System**
Yusuke Matsumoto *Forestry and Forest Products Research Institute, Japan*

POS-83 **Fluorescence as an Indicator of Lignin Structure and Particle Properties**
Julia Azzi *University of British Columbia, Canada*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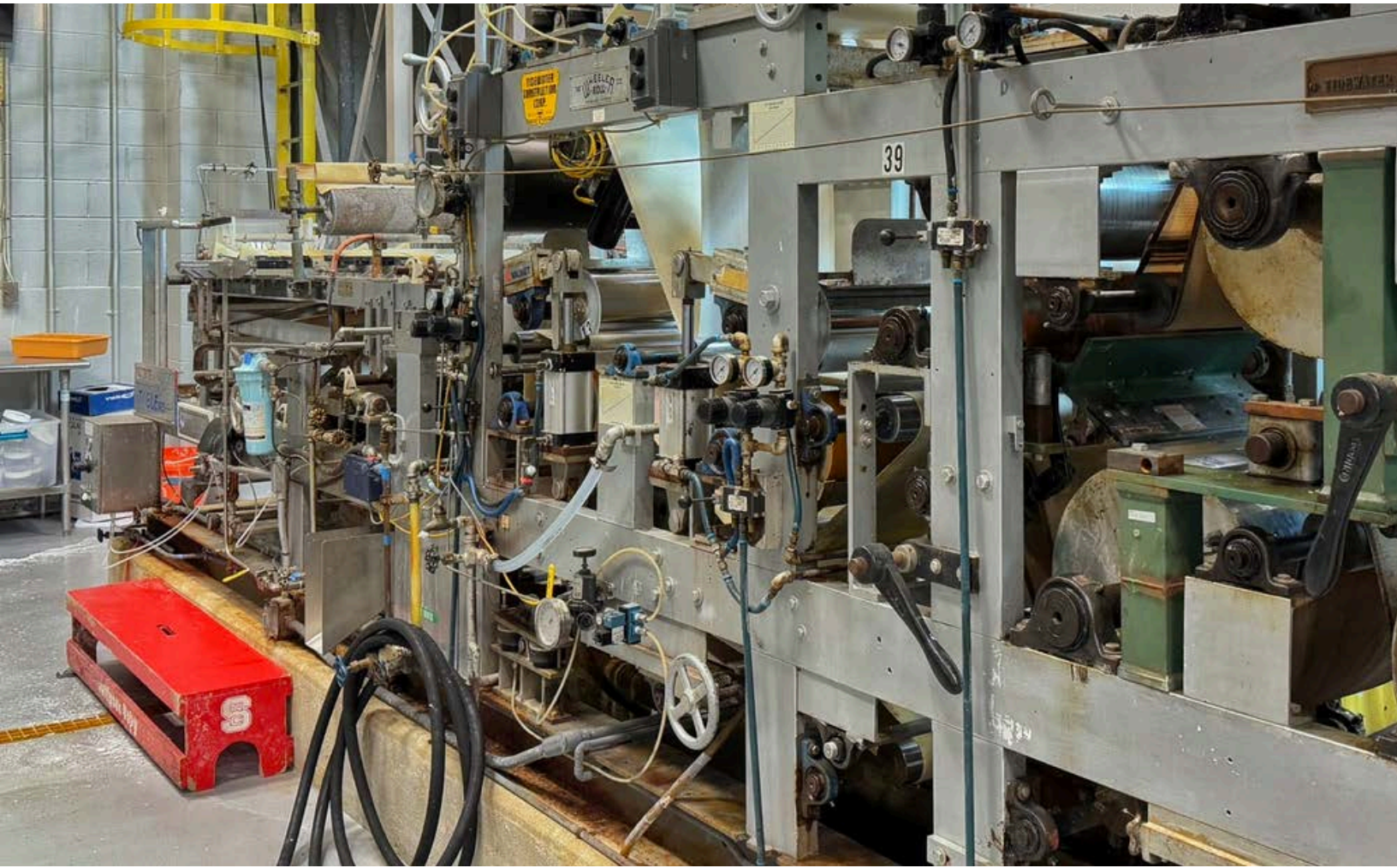
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Forest Biomaterials

The Department of Forest Biomaterials at NC State's College of Natural Resources is home to one of the oldest and most respected paper science and engineering programs in the world and a new cutting-edge program in sustainable materials and technology. We are passionate global leaders in innovative forest biomaterials research, educator of tomorrow's industry leaders, and creators of professional development training for current professionals. We not only deliver a modern and impactful curriculum to our students - we create sustainable solutions to address the materials and energy resources issues facing society.

Since our founding in 1929, we've been known for research and educational excellence, biomass utilization and sustainable biomaterials, and novel and innovative solutions to industry challenges. We serve the public, support the land-grant mission of NC State University, translate and apply research that drives discovery and generates value, advance knowledge through science, and educate and train future leaders.

By the Number

- **2,000+** alumni globally, including CEOs, senior executives, and owners of major paper and pulp or wood products companies
- **250+** undergraduate students on average
- **100** percent placement of Paper Science and Engineering undergraduates
- **60+** graduate students in on-campus
- **25** full-time teaching and research faculty
- **13** full-time staff members

Undergraduate Programs

- B.S. in Paper Science and Engineering
- B.S. in Paper Science and Engineering / B.S. in Chemical Engineering dual degree
- B.S. in Sustainable Materials and Technology

Graduate Programs

- Master of Science in Forest Biomaterials
- Ph.D. in Forest Biomaterials

Department Website

- http://cnr.ncsu.edu/fb/

Forest Biomaterials is a place where you'll find passionate people excelling at their profession, exceptional learning and global impacts. We routinely discover and develop products and processes for a better society, advance research in science and engineering, and graduate successful students.

Postdocs

Name	Project title	Email address
Mirela Artner	Cellulose Based Super Absorbent Materials / High-value Application for Waste Cotton in Papermaking	maartner@ncsu.edu
Nelson Barrios	Next-Gen Dewatering and Drying: Enzymatic Pathways to Decarbonize Papermaking	nabarrio@ncsu.edu
Sharmita Bera	Modification of Cellulose to Enhance the Barrier and Mechanical Properties	sbera@ncsu.edu
Seong-Min Cho	A Novel Approach to Decarbonizing the Pulp and Paper Industry: Kraft Chemical Recovery via Bipolar Membrane Electrodialysis	scho26@ncsu.edu
Karuna Nambi Gowri	Carbon Fiber Veils for Hydrogen Fuel Cells/ High-value Application for Waste Cotton in Papermaking	knambig@ncsu.edu
Saurbh Kumar Kardam	Biowaste Valorization and Preparation of Molded Products	skkardam@ncsu.edu
Jong-Chan Kim	Fabrication of Resources Cycling Anode Material Using Lignin	jkim246@ncsu.edu
Tushar Maiti	Enhanced Tissue and Hygiene Products	tkmaiti@ncsu.edu
Karthik Ananth Mani	Controlled Crystallinity for Packaing Substrates	kmani2@ncsu.edu
Jhonny Poveda	Affordable Pulping Technologies by Using Deep Eutectic Solvents	japoveda@ncsu.edu
Raman Rao	Advanced Real Time Analysis and Resource Recovery of Non recyclable Food Waste	rrao4@ncsu.edu
Qiaoqiao Ye	Nanoencapsulation of Molecules by Lignin Precipitation in an Anti-solvent System	qye6@ncsu.edu

Graduate students

Name	Project title	Email address
Myeong Rok Ahn	Characterization of Acidified Kraft Black Liquor for Bipolar Membrane Electrodialysis (BPMED) Application	mahn4@ncsu.edu
Kazi Md Yasin Arafat	Macro-To-Micro Level Fiber Modification for Advancing Sustainable Packaging	Karafat@ncsu.edu
Ivana Azuaje	Evaluating the Carbon Footprint, Recyclability and Techno-Economics of Selected Conventional and Alternative Fibers in Packaging Products	ipvillas@ncsu.edu
Munmun Basak	Functional Agro-residue and Nonrecycled Waste Derived Nanocellulose for Packaging and Agricultural Applications	mbasak@ncsu.edu

Name	Project title	Email address
Edgar Carrejo	Building Decarbonization Methods in the Pulp and Paper Industry	eacarrej@ncsu.edu
Hyolee Choi	Integrated Approaches to Kraft Lignin Valorization for Bio-Based Applications	hchoi33@ncsu.edu
Yefrid Cordoba	Techno-Economic Analysis of Ammonium Sulfite Pulping of Alternative Fibers for Market Pulp Production	yacordob@ncsu.edu
Moumita Dey	Biobased Barrier Coating	mdey2@ncsu.edu
Shaikat Chandra Dey	Biocrude Derived Anode Materials for Metal-ion Batteries	scdey@ncsu.edu
Alfonso Dominguez	Starch-Based Hot Melt Adhesives	adoming@ncsu.edu
Camilo Ramos Escobar	Pulp & Paper Mill-based Critical Minerals extraction	cramose@ncsu.edu
Naycari Forfora	Assessing the Environmental Impacts of Selected Fibers: Carbon Footprint of Tissue and Textile Applications	ngforfor@ncsu.edu
Jorge Franco	Assessing Conventional and Alternative Pulping Processes for Non-Wood Biomasses and Their Use in Packaging Applications	jhfranc2@ncsu.edu
Gavin Gaynor	Development of a Butanol/Water-Based Biorefinery for the Valorization of Miscanthus: Process Optimization, Solvent Recovery, and Modeling	jggaynor@ncsu.edu
Stephanie Gongora	Combining Textile Waste with OCC for Development of Semi-Extensible to Extensible Paper Properties	sgongor@ncsu.edu
Johanna Gonzalez	Optimization of Biomass Logistics	jagonz26@ncsu.edu
Maria Eugenia Gonzalez	Decarbonization of the Paper Industry Through Electrified Technologies and Enhanced Press Dewatering	megonza2@ncsu.edu
Jose Gonzalez-Aguirre	Process Design and Techno-Economic Analysis of Biographite and Biofuels Production	jagonz24@ncsu.edu
Naimul Haque	Comprehensive characterization of non-recycled Paper fraction of MSW for upcycling in products	shaque3@ncsu.edu
Shiyao Hong	Tuning the Liquid Crystalline Behavior of Cellulose Nanocrystals in Water	shong25@ncsu.edu
Jiawei Huang	Life Cycle Assessment and Techno-economic Analysis of Negative Carbon Sustainable Aviation Fuels from Paper Sludge	jhuang58@ncsu.edu
Md. Nazrul Islam	Investigating Catalytic Bio-graphite Mechanism and Applying Delayed Coking Technique for Sustainable Aviation Fuel	mislam27@ncsu.edu
Nazia Afrin Jashi	Agronomic Practices by Life Cycle Assessment and Carbon Footprint Methodologies	njashi@ncsu.edu

FB Department Researchers

Name	Project title	Email address
Taylor Kanipe	Cottonseed Oil as a Chemical Platform for Cellulosic Substrate Finishes	takanipe@ncsu.edu
Mica Keck	Carbon impacts of forest management through optimizing harvesting strategies and biomass utilization for biochar	mmkeck@ncsu.edu
Avisekh Kumar	Smart Conveyor Systems and FEA Simulations	aktripa2@ncsu.edu
Lokesh Kumar	Alternative fibers based sustainable food packaging	lkumar@ncsu.edu
Rakshit Kumar	Sustainable Waste Management: Textile Waste Characterization and Life-Cycle Assessment for Municipal Solid Waste Alternatives	rkumar24@ncsu.edu
Mariana Lendewig	Evaluating Feedstock Selection and Conversion Routes for Fiber Spinning of Non-wood Cellulose Nanofibrils	mlendew@ncsu.edu
Tushar Maiti	Enhanced Tissue and Hygiene Products	tkmaiti@ncsu.edu
Debsree Mandal	Abandoned Mine Land Reclamation for Energy Crop Production to Improve Economic and Environmental Benefits in Central Appalachian Region	dmandal@ncsu.edu
Jose Alejandro Fernandez Martinez	Understanding the Fundamentals of the Biodegradability of Polymer Blends and Additives for Nonwovens Applications	jaferna7@ncsu.edu
Anny Morales	Development of Paper Composites for Aluminum-Air Batteries	acmorale@ncsu.edu
Anibal Moran	Upgrading Old Corrugated Containerboard (OCC) to Dissolving Pulp	ajmoran@ncsu.edu
Luz Meza	Sustainable Cellulose Films for Soft Electronics: Characterization, Biodegradation and Recycling	lmezaca@ncsu.edu
Jonathan Morizet-Davis	Environmental Life Cycle Analysis of a Natural and Genetically Modified Fir Christmas Trees in NC	jhmorize@ncsu.edu
Dipta Mozumder	Sustainable Packaging Solutions	dmozumd@ncsu.edu
Jannatun Nayeem	Sulfite Pulping of Alternative Fiber	jnayeem@ncsu.edu
Lia Novak	Lignin Extraction and Valorization for Agriculture and Packaging Applications	lnovak@ncsu.edu
Rhonald Ortega	Life cycle assessment of tissue products, software development and dynamic LCA	raortega@ncsu.edy
Luis Pena	Integrated Life Cycle and Techno-economic analysis of Bioethanol production from waste paper	lfpenaro@ncsu.edu
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