

LITTLE AMERICA HOTEL ♦ FLAGSTAFF, ARIZONA

SWST 64TH INTERNATIONAL CONVENTION **AUGUST 1-6, 2021**

VALUE FROM WOOD RESOURCES THROUGH INNOVATION



SOCIETY OF
WOOD SCIENCE &
TECHNOLOGY

SUNDAY, AUGUST 1

14:00-17:00 **REGISTRATION - FOYER OF BALLROOMS**

19:00-21:00 **RECEPTION - EAST LAWN OF LITTLE AMERICA HOTEL**

MONDAY, AUGUST 2

ALL PRESENTATIONS TO BE HELD IN BALLROOMS B & C, LITTLE AMERICA HOTEL

General Chair of Convention: Rupert Wimmer, University of Natural Resources and Life Sciences, Vienna, Austria

7:30-8:30 **REGISTRATION - FOYER OF BALLROOMS**

9:00-9:30 **KEYNOTE** - Andrew Sánchez Meador, Northern Arizona University, United States, **“Clearing Hurdles to Forest Restoration in the Southwestern United States”**

9:30-12:30 **APPROACHES TO COMBATTING ILLEGAL LOGGING IN TIMBER TRADE**

Chairs: Kristen Finch, USFS International Programs, United States and Cady Lancaster, Oregon State University, United States

9:30-10:00 Jason Grant, World Wildlife Fund, United States, **“Combating Illegal Logging Using Wood Identification: The Global Context”**

10:00-10:30 Cady Lancaster, Oregon State University, United States, **“Forensic Wood Identification Resources for Commercial Due Diligence and Quality Management”**

10:30-10:45 Coffee

10:45-11:00 Adam Wade, Mississippi State University, USA, **“Identification of North American Hardwoods: Wood Anatomists vs Machine Learning Models”**

11:00-11:30 Charlie Watkinson, Agroisolab, United Kingdom, **“The Use of Stable Isotope Analysis to Verify the Origin of Wood”**

11:30-12:00 Kristen Finch, USFS International Programs, United States, **“Exploring the Practical Limits of DNA-Based Geolocalization in Forest Trees”**

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MONDAY, AUGUST 2 *continued*

12:00-12:30 Discussion/Q&A

12:30-13:30 **LUNCH**

FOREST & TREE VALUES: ADEQUATE LAND USE, PRODUCTS AND ENVIRONMENTAL THREATS

Chair: Frank Owens, Mississippi State University, United States

13:45-14:00 Han-Sup Han, Northern Arizona University, United States, “**Chip & Ship Pilot Project: Logistics of Supplying Wood Chips Over Long Distance using Railroad Transportation**”

14:00-14:15 Nan Nan, West Virginia University, United States, “**Fundamental and Thermal Characteristics of Forest Logging Residues in the Eastern United States**”

14:15-14:30 Andreja Kutnar, InnoRenew CoE, Slovenia, “**Opportunities for Wood Sector in European Climate Actions**”

14:30-14:45 Discussion/Q&A

14:45-15:00 Coffee

INTERNATIONAL TRENDS IN INNOVATION AND EDUCATION

Chairs: Eva Haviarova, Purdue University, United States; Adam Taylor, University of Tennessee, United States

15:30-15:45 Bob Smith, SBIO - Virginia Tech, United States, “**The Current Status of Wood Science Education in Europe**”

15:45-16:00 Douglas Gardner, University of Maine, United States, “**‘Back to the Future’ - The University of Maine’s New Sustainable Materials and Technology Major**”

16:00-16:15 Kathy Young, Oregon State University, United States, “**Undergraduate Research in Mass Timber and Digital Manufacturing: A Multiple-Year Experiential Learning Project**”

16:15-16:30 Adam Taylor, University of Tennessee, United States, “**DIY Structural Lumber Grading**”

16:30-16:45 Amy Simmons, InnoRenew CoE and University of Primorska, Slovenia, “**Equality and Inclusivity at Research Institutes**”

16:45-17:00 Perry Peralta, North Carolina State University, United States, “**Pathways to Sustainable Materials Science and Engineering: Enhancing College and Career Opportunities for Minority Women From Rural North Carolina**”

19:00-21:00 Student Trivia Night

TUESDAY, AUGUST 3

7:30-8:30 **REGISTRATION**

BUSINESS, MARKET DEVELOPMENTS AND REGULATIONS

Chair: Henry Quesada, Virginia Tech, United States

8:30-8:45 Henry Quesada, Virginia Tech, United States, “**Structural Grade Hardwood Lumber Economic Feasibility**”

8:45-9:00 Mike Eckhoff, Hoover Treated Wood Products, Inc., United States, “**Expanding Market Opportunities for Fire-Retardant Treated Wood Through Regulation**”

9:00-9:15 Matthew Schwarzkopf, InnoRenew CoE and University of Primorska, Slovenia, “**Flexible Biorefining for Renewable Feedstocks in Wood Adhesives**”

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TUESDAY, AUGUST 3 *continued*

9:15-9:30 Takuya Morii, The University of Tokyo, Japan, “**Economic Ripple Effects and Environmental Contributions of Multistory Wooden Building by Input-Output Analysis**”

9:30-9:45 Lech Muszynski, Oregon State University, United States, “**Mass-Timber Panel MTP Industry and its Supply/Value Chain**”

9:45-10:00 Candra Burns, Talking Forests, United States, “**How to Use Social Media and Market Updates**”

10:00-10:15 Coffee

SUSTAINABLE LIVING AND HOUSING

Chair: Susan LeVan-Green, Editor, Wood and Fiber Science, SWST, United States

10:30-10:45 Joseph Loferski, Virginia Tech, United States, “**Evaluation of Surface Hardness Tests for Engineered Flooring**”

10:45-11:00 Hongmei Gu, USDA Forest Service Forest Products Laboratory, United States, “**Comparative Whole Building Life Cycle Assessment on CLT Mass Timber Buildings and Concrete Buildings in US Northeast Region**”

11:00-11:15 Sujata Mandal, University of North Texas, United States, “**Potential of Industrial Hemp Towards Environmental Application**”

11:15-11:30 Kamal Neupane, Mississippi State University, United States “**Short-Term Field Durability Test of Physical Barriers Against Termites in a CLT Wall Envelope System**”

11:30-11:45 Lech Muszynski, Oregon State University, United States, “**Capturing Carbon Footprint of the End-of-Life Options for Mass-Timber Panel (MTP) Buildings**”

11:45-12:00 Sujit Bhandari, Oregon State University, United States, “**Behavior of In-Plane Butt-Joints With 45° Screws in Ponderosa Pine CLT**”

12:00-12:15 Kenneth Udele, Oregon State University, United States, “**Connection Performance in Decayed Cross-Laminated Timber Members**”

12:15-12:30 Discussion/Q&A

12:30-13:30 **LUNCH**

VALUABLE COMPOSITES AND ADHESIVES 1

Chair: Douglas Gardner, University of Maine, United States

13:45-14:00 Rupert Wimmer, SWST Blues Music Video

14:00-14:15 J. Elliott Sanders, University of Maine, United States, “**Production of Dry Nano-Scale Cellulose Nanocrystal Powder via Electrospaying for Sustainable Composites**”

14:15-14:30 Lu Wang, University of Maine, United States, “**Cellulose Nanofiber/Polymer Composite Mechanical Properties Dependence on Fiber Feedstock**”

14:30-14:45 Seung Hyun Hong, Oregon State University, United States, “**Char Rates and Residual Char Depths in Unprotected CLT Floor and Wall Assemblies After 2-Hour ASTM E119 Fire Tests**”

14:45-15:00 Brian Via, Auburn University, United States, “**Industrial Applications of Soy Flour Substituted pMDI**”

15:00-15:15 Sina Jahedi, Oregon State University, United States, “**Mechanical Performance of Prototype CLT Layups Made of Restoration Harvested Ponderosa Pine**”

15:15-15:30 Xuan Wang, University of North Texas, United States, “**A Strong and Highly Light-Transmissive Bamboo Composite**”

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TUESDAY, AUGUST 3 *continued*

15:30-15:45 Discussion/Q&A

15:45-16:00 Coffee, Cash Bar, Snacks

POSTER SESSION & STUDENT POSTER COMPETITION - 16:00-19:00 - PONDEROSA ROOM

Chair: Tamara França, Mississippi State University, United States

STUDENT POSTER COMPETITION PRESENTERS

Sujit Bhandari, Oregon State University, United States, **“Behavior of In-Plane Butt-Joints with 45° Screws in Ponderosa Pine CLT”**

Cong Chen, University of Maine, United States, **“Cellulose Nanocrystal Coatings on Poly (Lactic Acid) Film for Food Packaging Applications”**

Alex Dillard, Oregon State University, United States, **“The Effect of Exposure to Elevated Temperature on Dowel Bearing Strength of Mass Plywood Panels”**

Sungjun Hwang, University of Maine, United States, **“Study on the Morphological Property of CNC Powders Manufactured by Ultrasonic Spray Dryer”**

Seung Hyun Hong, Oregon State University, United States, **“Char Rate of Custom CLT Layups Utilizing Ponderosa Pine From Logs Harvested in Western Forest Restoration Programs”**

Sina Jahedi, Oregon State University, United States, **“Characteristics of Ponderosa Pine Dimension Lumber Obtained From Forest Restoration Programs”**

Sujata Mandal, University of North Texas, United States, **“Potential of Industrial Hemp Towards Environmental Application”**

David Milsted, Mississippi State University, United States, **“A New Generation Apparatus to Automatically Study the Hygroscopicity of Wood”**

Kamal Neupane, Mississippi State University, United States, **“Short-Term Field Durability Test of Physical Barriers Against Termites in a CLT Wall Envelope System”**

Geeta Pokhrel, University of Maine, **“Utilization of Secondary Processing Mill Residues in Maine to Produce Raw Materials for Manufacturing Wood-Plastic Composites”**

Talbot Rueppel, Oregon State University, United States, **“Quantifying the Percent Wood Failure in Adhesive Bonded Joints via UV-VIS Spectroscopy”**

J. Elliott Sanders, University of Maine, United States, **“Production of Dry Nano-Scale Cellulose Nanocrystal Powder via Electrospaying for Sustainable Composites”**

Lee Smith, University of North Texas, United States, **“Lint Fiber Polyethylene Composites Fabrication”**

Kenneth Udele, Oregon State University, United States, **“Connection Performance in Decayed Cross-Laminated Timber Members”**

Cody Wainscott, Oregon State University, United States, **“In-Depth Characterization of Bondlines in Cross-Laminated Timber Made With Preservative-Treated Lumber”**

Xuan Wang, University of North Texas, United States, **“A Strong and Highly Light-Transmissive Bamboo Composite”**

Kathy Young, Oregon State University, United States, **“Undergraduate Research in Mass Timber and Digital Manufacturing: A Multiple-Year Experiential Learning Project”**

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TUESDAY, AUGUST 3 *continued*

REGULAR POSTER PRESENTERS

Osei Asafu-Adjaye, Auburn University, USA, “**Hydrothermal Liquefaction and Fast Pyrolysis Biochar as Adsorbent for Textile Dye Removal**”

Eva Haviarova, Purdue University, United States, “**Color Enhancement of Ash and Yellow Poplar by Surface Thermal Treatments**”

Eva Haviarova, Purdue University, United States, “**Evaluating the Inclusion of Circular Economy Practices in the Furniture Industry**”

Eva Haviarova, Purdue University, United States, “**Hardwood CLT Performance Testing, Product Development, and Fabrication**”

Eva Haviarova, Purdue University, United States, “**Zero Shot Learning of the Attributes Based on Microscopic Wood Images**”

Frank Owens, Mississippi State University, United States, “**Computer Vision Identification of North American Ring-Porous Hardwoods**”

Henry Quesada, Virginia Tech, United States, “**Hardwood Sawmills Capacity to Produce Structural Grade Hardwood Lumber**”

Jinwu Wang, US Forest Service Forest Products Laboratory, United States, “**Broaden Cellulose-Based Packaging Into Plastic Packaging Markets**”

WEDNESDAY, AUGUST 4 - FREE DAY FOR TOURS

THURSDAY, AUGUST 5

7:30-8:30 **REGISTRATION**

VALUABLE COMPOSITES AND ADHESIVES 2

Chair: Douglas Gardner, University of Maine, United States

8:30-8:45 Fred Kamke, Oregon State University, United States, “**Characterization of Resin Distribution on Wood Strands**”

8:45-9:00 Cong Chen, University of Maine, United States, “**Cellulose Nanocrystal Coatings on Poly (Lactic Acid) Film for Food Packaging Applications**”

9:00-9:15 Armando McDonald, University of Idaho, United States, “**Lignin-Polyesteramide Based Thermoplastics**”

9:15-9:30 Gloria Oporto, West Virginia University, United States, “**Biofilter-Based Nanofibrillated Cellulose and Polylactic Acid for Personal Protective Equipment**”

9:30-9:45 Yucheng Peng, Auburn University, United States, “**Measurements of Cellulose Nanocrystal Suspension Viscosity Using a Rotational Viscometer**”

9:45-10:00 Mohit Raja Srivasta, Oregon State University, United States, “**Experimental Investigation of Shear and Flexural Properties of Mass Plywood Panel and Concrete Composite Floor System**”

10:00-10:15 Lee Smith, University of North Texas, United States, “**Lint Fiber Polyethylene Composites Fabrication**”

10:15-10:30 Questions/Q&A

10:30-10:45 Coffee

RESILIENT WOOD RESOURCES (REVISITING WOOD QUALITY)

Chair: Dave Auty, Northern Arizona University, United States

11:00-11:15 David Auty, Northern Arizona University, United States, “**Modeling Specific Gravity and Diameter Inside Bark of Western Hemlock and Sitka Spruce Growing in Southeast Alaska**”

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THURSDAY, AUGUST 5 continued

11:15-11:30 Gabrielly Bobadilha, Mississippi State University, United States, “**Brown Rot Decay Development on Coated Southern Pine CLT and Dimensional Southern Pine Lumber**”

11:30-11:45 Sameen Raut, University of Georgia, United States, “**Image Analysis to Assess Wood Variability in Longleaf Pine Cross-Sectional Disks**”

11:45-12:00 Marly Carmona, Mississippi State University, United States, “**A Comparison of Two Methods for Evaluating Percentage Latewood of Southern Pine Structural Lumber**”

12:00-12:15 Talbot Rueppel, Oregon State University, United States, “**Quantifying the Percent Wood Failure in Adhesive Bonded Joints via UV-VIS Spectroscopy**”

12:15-13:45 **LUNCH & SWST ANNUAL BUSINESS MEETING/AWARDS CEREMONY**

WOOD PHYSICS AND PROPERTIES 1

Chair: Gloria Oporto, West Virginia University, United States

14:00-14:15 Sameen Raut, University of Georgia, United States, “**Relating Within-Tree Variability in Ultrasonic Velocity to Microfibril Angle in Loblolly Pine**”

14:15-14:30 David Milsted, Mississippi State University, United States, “**A New Generation Apparatus to Automatically Study the Hygroscopicity of Wood**”

14:30-14:45 Rajnish Kumar, North Carolina State University, United States, “**High-Performance Sustainable Tissue Paper From Residue of Decorticated Nonwood Fique Fibers**”

14:45-15:00 Discussion/Q&A

15:00-15:15 Coffee Break

15:15-15:30 Ilona Peszlen, North Carolina State University, United States, “**Bacterial Degradation of the Cell Wall of Transgenic Poplar With Modified Lignin Content and Composition**”

15:30-15:45 Nawa Pokhrel, University of Georgia, United States, “**Do Resin Canals Help Prevent Tree Mortality From Southern Pine Dieback?**”

15:45-16:00 Perry Peralta, North Carolina State University, United States, “**Plant-Based Materials Selection**”

16:00-16:15 Discussion/Q&A

19:00-22:00 **BANQUET - BALLROOMS B & C**

Entertainment provided by SWST members Doug Gardner and Tammi Franca

FRIDAY, AUGUST 6

7:30-8:30 **REGISTRATION**

WOOD PHYSICS AND PROPERTIES 2

Chair: Tamara Franca, Mississippi State University, United States

8:30-8:45 Daniel Burnett, Surface Measurement Systems, United States, “**Analysis of Wood and Biomaterials by Dynamic Vapor Sorption Technique**”

8:45-9:00 Marly Carmona, Mississippi State University, United States, “**Assessing Southern Pine Tension Properties Using Nondestructive Evaluation**”

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9:00-9:15 Brianna Duquette, Mississippi State University, United States, **“Evaluation of Decay Effect on Tension Perpendicular to Grain Properties of Wood”**

9:15-9:30 Discussion/Q&A

9:30-9:45 Coffee

10:00-11:30 **WORKSHOP REVIEW ON WOOD EDUCATION**

Chair: Bob Smith, Virginia Tech, United States

10:00-10:15 Perry Peralta, North Carolina State University, United States, **“Sustainable Materials Science and Technology, A Defining Discipline of Our Time”**

11:30-12:00 Closing Ceremony and Student Oral Presentation Awards