

International Wood Composites Symposium 2014

Market Intelligence, Product Development, Process Innovation

**Seattle, Washington, USA
30 April – 1 May 2014**

Editors:

Karl Englund

Robert Tichy

ISBN: 978-1-63439-641-7

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2014) by Washington State University (WSU)
All rights reserved.

Printed by Curran Associates, Inc. (2015)

For permission requests, please contact Washington State University (WSU)
at the address below.

Washington State University (WSU)
c/o Wanda Terry
P.O. Box 641806
Pullman, WA 99164-1806

Phone: (509) 335-6437

wterry@wsu.edu

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2634
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

Gate-To-Gate Life-Cycle Inventory of Hardboard Production in North America	1
<i>R. Bergman</i>	
Entering an Age of Rediscovery	10
<i>E. Elias</i>	
Market Forces and Regulatory Issues Facing the Composite Panel Industry	11
<i>T. Julia</i>	
Use of Nanomaterials to Enhance the Hydrophobicity and Oleophobicity of Laminated Wood Based Panels	12
<i>P. Tsirogiannis, K. Siamos, C. Markessini</i>	
The U.S. Lacey Act: Impacts on the Asian Furniture and Flooring Market	13
<i>B. Roe, I. Eastin, I. Ganguly</i>	
Calculating Profit Loss on Over-Densifying Particleboard	14
<i>B. Gardner, S. Leavengood</i>	
Advanced Control Methodology for Biomass Combustion	15
<i>S. Bjornsson, R. Gorderz, P. Maltei, I. Novosselov</i>	
Woody Biomass Feedstock Logistics: LCA Scenarios for Forest Harvest Residuals in the Mid-Cascade to Pacific Region	16
<i>T. Bowers, I. Ganguly, F. Pierobon, I. Eastin, C. Chen, C. Sifford</i>	
The Role of Structural Composite Lumber in Mass Timber Construction	17
<i>C. Brandt</i>	
Characterization of Residual Streams and Value-Added Markets	23
<i>R. Buchan</i>	
Northwest Wood-Based Biofuels & Co-Products Conference	24
<i>N/A</i>	
Light Fillers: Development of Low Density Particles for Applications in Automotive and Furniture Industries	31
<i>L. Carvalho, J. Ferra, A. Dias, S. Monteiro, L. Carvalho, J. Martins, F. Magalhaes</i>	
Recent Developments in the Performance of Formaldehyde Scavengers in Wood-Based Panels	32
<i>L. Carvalho, J. Martins</i>	
Optimization of Veneer Drying Processes	51
<i>C. Dai, B. Wang</i>	
Effect of Different Biomass Pretreatments and Processing Parameters on the Properties and Performance of NARA Lignin-Derived Activated Carbons	63
<i>I. Dallmeyer</i>	
Biolignin™, a Renewable and Efficient Material for Wood Adhesives	64
<i>B. Benjelloun-Mlayah, N. Tachon, L. Pilato, M. Delmas</i>	
An Age of Rediscovery: Opportunities and Challenges in a Recovering Economy	72
<i>N/A</i>	
Latin American Plantation Forest Resources and Development of the Composite Wood Panel Sector	105
<i>B. Flynn</i>	
Analyzing Changes in Lignin Chemistry Due to Biofuel Production Process	117
<i>C. Fox</i>	
Wood-Generated Formaldehyde	118
<i>C. Frazier, G. Wan</i>	
Influence of Organic-Fillers in Phenol-Formaldehyde Wood Adhesion	119
<i>C. Frazier, X. Yang, A. Zink-Sharp</i>	
The BALI Project	133
<i>J. Gargulak</i>	
Precision Spray Technology Solutions for Wax, Resin, Release Agent and Water Application	145
<i>R. Grant</i>	
BINOS - Forming the Future	146
<i>N/A</i>	
Mechanochemical Modification and Applications of Organosolv and Kraft Lignin	157
<i>X. Guo, J. Xin, M. Wolcott, J. Zhang</i>	
Mechanical, Acoustic and Fire Properties of Southern Pine Cross-Laminated Timber	158
<i>D. Hindman, J. Bouldin</i>	

Micro-Structural Adhesion in Bio-Composite Materials During their Heated Consolidation	174
<i>P. Humphrey</i>	
3-D Mat Modification for Continuous Wood-Based Panel Production	201
<i>T. Joscak, M. Joscak, C. Schmidberger, A. Lopez, A. Fernandez</i>	
Business & Regulatory Outlook for the North American Composite Panel Industry	206
<i>T. Julia</i>	
Low Cost, Bio-Renewable Carbon Fibers from Lignin/PLA Blends and Graft Copolymers	219
<i>M. Kessler</i>	
Preparation of a New Liquid Thermal Stabilizer from Rosin and Fatty Acid and Study of the Properties of the Stabilized PVC	236
<i>M. Li, J. Jiang, J. Zhang, X. Yang, J. Xia</i>	
A Blend of Natural Materials as a Superior Wood Adhesive	237
<i>K. Li</i>	
Development of a Method for the Production of Composite Wood Polypropylene Plastic and Pseudostem of Banana	250
<i>A. Lopez, V. Parra</i>	
Dancing with the Elephants "The Life of a Wood Product Manufacturer in our Recovering Industry"	251
<i>T. Luce</i>	
2Glam: Second Generation Laminates	264
<i>J. Martins, J. Ferra, A. Henriques, A. Antunes, J. Pereira, C. Coelho, S. Rodrigues, F. Magalhaes, L. Carvalho</i>	
A New Approach to Evaluate the Quality of Wood-Based Panels Surfaced with Laminates	265
<i>J. Martins, C. Coelho, L. Carvalho</i>	
Enabling Technologies for Sustainable Composite Wood Products	266
<i>T. Miller</i>	
Incorporation of the Carbon Sequestration into the Life Cycle Assessment of Woody Biomass Based Bioenergy	274
<i>F. Pierobon, I. Ganguly, T. Bowers, I. Eastin, T. Anfodillo</i>	
Preparation and Properties of Glassy Liquid Crystals Derived from Rosin	275
<i>X. Rao, J. Xin, M. Li, J. Zhang</i>	
Rotary Veneer Production from North American Hybrid Poplar Plantation	276
<i>T. Schallich</i>	
Wood Based Lignin Co Products: An Overview	280
<i>T. Spink</i>	
Technical Efficiency, Technical Progress and Total Factor Productivity of China's Paper Industry	287
<i>S. Tang</i>	
Unique Surface Properties: Utilisation of Pioneering Nanomaterials for Enhanced Hyrdo- & Oleo-Phobicity	288
<i>P. Tsirogiannis</i>	
Partially Depolymerized Enzymolysis Lignin: Preparation, Characterization and Application	300
<i>J. Xin, M. Wolcott, J. Zhang</i>	
Resin Transfer Molding (RTM) of Wood-Strand Reinforced Composite Panels	301
<i>W. Yang, V. Yadama</i>	
Surface Quality Control Inspection of Raw Panels	302
<i>S. Zimmermann</i>	
The Good, the Bad, and the Ugly - MDF Mills to Laminate: How Different MDF Mills Impact the End Performance of our Product	303
<i>D. Meyer, J. Beck, D. Sauder</i>	
Author Index	