FUNDED PROJECTS 1999 – 2022

The name of current students will not be shared.

2022

Understanding the fundamental influence of wood extractives on wood
PI: S. Peresin, S. Gururaja, J. Nairn, J. Simonsen, C. Frazier
Auburn University, Oregon State University, Virginia Tech

Monitoring phenol formaldehyde and wax content with VIS/NIR smartphone technology
PI: B. Via
Auburn University

A fundamental study of lignin reaction with formaldehyde
PI: M. Nejad
Michigan State University

Using notch delamination to study moisture-adhesive interactions
PI: A. Sinha
Oregon State University

Near-infrared hyperspectral imaging and chemometric techniques for estimation of percent wood failure (pwf) in adhesive bonds
PI: L. Schimleck & L. Muszynski
Oregon State University

2021

Investigating lignin consistency from batch-to-batch
PI: M. Nejad
Michigan State University

Improving durability of wood products by reducing lignin degradation
PI: M. Nejad
Michigan State University

Long-term response of wood-based composites in variable climate conditions
PI: L. Muszynski, J. Nairn, M. Riggio
Oregon State University

Bench-scale characterization of joints and coatings
PI: Fred A. Kamke and Lech Muszynski | Student: Talbot Rueppel
Oregon State University

2020

Wax migration
PI: Charles E. Frazier
Virginia Tech

Repeatable measurement method for percent wood failure
PI: Fred A. Kamke and Lech Muszynski | Student: Talbot Rueppel
Oregon State University

Preliminary investigation of DMDHEU-treated strand board
PI: Gerald Presley and Fred A. Kamke
Oregon State University

In-depth characterization of bondlines in CLT made w treated lumber
PI: Gerald Presley and Jed Cappellazzi
Oregon State University

Improving durability of wood products by reducing lignin degradation
PI: Mojgan Nejad | Student: Saeid Nikafshar
Michigan State University

Suitability of steam-explosion lignin for polymeric resin applications
PI: Mojgan Nejad | Student: Saeid Nikafshar, Mohsen Siahkamari, and Mona Alenajad
Michigan State University

2019

Mass plywood panels: performance, design and application
PI: Fred A. Kamke and Arijit Sinha | Student: Matthias Wind
Oregon State University

Bench-scale screening test for ASTM E119
PI: Scott Case and Brian Lattimer | Student: Michael Gangi
Virginia Tech

2018

Investigating the use of biopolymers for additive manufacturing
PI: Daniel Saloni, Guillermo Velarde, and Maria Soledad Peresin | Student: Christina Verdi
North Carolina State University | Auburn University

Analysis of adhesive atomization on composite bond performance

PI: Fred A. Kamke and John Nairn | Student: Dylan Willard
Oregon State University

Moisture resistance of wood-based composite materials
PI: Fred A. Kamke and Scott Leavengood | Student: Luis Molina
Oregon State University

Elucidating mech. of CNF reinforcement in wood adhesives, composites
PI: John Simonsen and John Nairn | Student: Maria Muñoz Torres
Oregon State University

Effect of CNF at the wood-based matrix/resin interface
PI: Maria Soledad Peresin and Brian Via | Student: Maria Celeste Iglesias
Auburn University

Suitability of different lignins as polyol replacement in PU adhesives
PI: Mojgan Nejad | Student: Mona Alinejad
Michigan State University

2017

Understanding elevated temperature performance of wood composites
PI: Arijit Sinha | Student: Byrne T. Miyamoto
Oregon State University

Using crack growth experiments/moisture and thermal durability of wood-based composites
PI: Arijit Sinha | Student: Sweta Mahapatra
Oregon State University

Fundamentals of Resole Formulation
PI: Charles E. Frazier | Student: Ryan Gray
Virginia Tech

Wood thermochemistry
PI: Charles E. Frazier | Student: Sara Yazdi
Virginia Tech

Comparison of accelerated weathering test protocols
PI: Fred A. Kamke | Student: Luis Molina
Oregon State University

Characterizing accelerated weathering conditions
PI: Fred A. Kamke | Student: Micah L. Sutfin
Oregon State University

Geometry and mechanics of panel warpage
PI: Joseph Loferski | Student: Kerrigan A. Strong
Virginia Tech

Dispersion force-based new adhesive concepts
PI: Maren Roman | Student: Apratim Jash
Virginia Tech

Comparative analysis of different lignins as phenol substitutes
PI: Mojgan Nejad | Student: Christian Henry
Michigan State University

2016

Understanding moisture gradients during accelerated weathering through numerical modeling
PI: Arijit Sinha and Fred A. Kamke | Student: Daniel J. Way
Oregon State University

Adhesive challenges with maple and hickory veneer at low moisture levels
PI: Audrey Zink-Sharp | Student: Cody Wykle
Virginia Tech

Carbon Isotope ratios: novel view of CH2O emissions
PI: Charles E. Frazier | Student: Mark Cashman
Virginia Tech

Carbon Isotope ratios: novel view of CH2O emissions
PI: Charles E. Frazier | Student: Niloofar Yousefi Shivyari
Virginia Tech

Understanding the machinability of MDF and HDF
PI: Daniel Saloni | Student: Carlos Leca

North Carolina State University

Novel adhesives from soybean proteins and biopolymer blends
PI: Daniel Saloni and Guillermo Velarde | Student:
North Carolina State University

Analysis of vertical density profile during hot pressing
PI: Fred A. Kamke | Student: Kenya Hazell
Oregon State University

Comparison of accelerated weathering test protocols
PI: Fred A. Kamke | Student: Valeria Luna and Tomas Laserre
Oregon State University

Numerical simulations of adhesive penetration in various woods
PI: John Nairn | Student: Chad Hammerquist
Oregon State University

Comparative analysis of different lignins as phenol substitutes
PI: Mojgan Nejad | Student: Isal Kalami
Michigan State University

Wood Composites Performance Assessment, Certification Needs for Western US
PI: Paul Frederick Lalelike | Student:
Oregon State University

Characterizing adhesion between high & low density woods
PI: Scott Case, David Dillard and Chip Frazier | Student: Yuqin Li
Virginia Tech

Lignin-based polymers with enhanced adhesive and elastomeric properties
PI: Zhenglun "Glen" Li | Student: Dylan Packard
Oregon State University

2015

Wetting, diffusion associated with selected liquid/wood interfaces
PI: Charles E. Frazier | Student: Christa Stables
Virginia Tech

Determination of tool life during CNC machining for four panel products
PI: Guillermo Velarde and Rick Lemaster | Student: Conrad Michael
North Carolina State University

Numerical simulation of adhesive penetration into wood structure
PI: John Nairn | Student: Chad C. Hammerquist
Oregon State University

Use of acoustic emission to classify wood chips OR flakes
PI: Rick Lemaster and Guillermo Velarde | Student: Lyndsey Campbell, Kamila Edwards
North Carolina State University

Bio-based polyamide with oligomeric lignin backbone
PI: Zhenglun "Glen" Li | Student: Jacob Staudhammer
Oregon State University

2014
Biogenic formaldehyde emission
PI: Charles E. Frazier | Student: Guigui Wan
Virginia Tech

Formaldehyde in tree increment cores
PI: Charles E. Frazier | Student: H. Wise and G. Lewis
Virginia Tech

MDF fiber quality
PI: Charles E. Frazier | Student: Mohammad Tasooji
Virginia Tech

Organic fillers in PF resoles
PI: Charles E. Frazier | Student: Xuyang (Chuck) Wang
Virginia Tech

Wetting, diffusion associated with selected liquid/wood interfaces
PI: Fred A. Kamke | Student: Balkis Bakar
Oregon State University

Preliminary investigation of adhesive bonds using IR Microscopy
PI: Fred A. Kamke | Student: Paul Böhm
Oregon State University

Multi-scale accelerated weathering of wood composite materials
PI: Fred A. Kamke and Arijit Sinha | Student: Daniel J. Way
Oregon State University

Checking in maple plywood
PI: Scott Leavengood and Lech Muszynski | Student: Elijah Wilson
Oregon State University

2013
Mechanisms of wood-generated formaldehyde emission
PI: Charles E. Frazier | Student: Guigui Wan
Virginia Tech

Application of accelerated weathering for the development of an NDT product durability assessment toolkit
PI: Fred A. Kamke | Student: Frederick Laleicke
Oregon State University

Preliminary investigation of adhesive bonds using IR Microscopy
PI: Fred A. Kamke | Student: Shawn R. Freitas
Oregon State University

Multi-scale investigation of adhesive bond durability
PI: Fred A. Kamke and Arijit Sinha | Student: Daniel J. Ching
Oregon State University

Multi-scale investigation of adhesive bond durability

PI: Fred A. Kamke and Arijit Sinha | Student: Daniel J. Way
Oregon State University

Multi-scale investigation of adhesive bond durability
PI: Fred A. Kamke and Arijit Sinha | Student: Jesse L. Paris
Oregon State University

Multi-scale investigation of adhesive bond durability
PI: Fred A. Kamke and Arijit Sinha | Student: Paige E. McKinley
Oregon State University

2012
Understanding the differences in bonding characteristics of Douglas-fir and SYP wood
PI: Audrey Zink-Sharp and Scott H. Renneckar | Student: Kyle Mirabile
Virginia Tech

Adhesion fundamentals in spotted gum
PI: Charles E. Frazier | Student: Coleman Burch
Virginia Tech

Developing a reference material for formaldehyde emissions testing
PI: John Little, Chip Frazier and Steve Cox | Student: Xiaomin Zhao
Virginia Tech

Methodologies for ranking resins by their effect on durability of wood composites
PI: John Nairn and Arijit Sinha | Student: Babak Mirzaei
Oregon State University

2011
Wood Modifications Promoting Durable Adhesion
PI: Charles E. Frazier | Student: Mohammad Tasooji
Virginia Tech

Investigation of micro-scale wood-adhesive interaction
PI: Fred Kamke, Lech Muszynski and John Nairn | Student: Jesse L. Paris

Oregon State University

Investigation of micro-scale wood-adhesive interaction
PI: Fred Kamke, Lech Muszynski and John Nairn | Student: Matthew Schwartzkopf
Oregon State University

Resin efficiency for non-structural panels
PI: Gregory Smith, Lech Muszynski and John Simonsen | Student: Nicholas Lampert
Oregon State University

2010
Fundamentals of formaldehyde detection and emission determination
PI: Barbara Cole, Douglas Gardener, Raymond Fort and Chip Frazier | Student: Ashley Hellenbrand
Virginia Tech | University of Maine

Influence of filler particle size on adhesive penetration and performance
PI: Charles E. Frazier | Student: Xing Yang
Virginia Tech

Improving blending efficiency and resin distribution of the rotary drum blending process using discrete element modeling.
PI: Gregory Smith | Student: Ying-Li (Ingrid) Tsai
University of British Columbia

Resin efficiency for non-structural panels
PI: Gregory Smith, Lech Muszynski and John Simonsen | Student: Jorn Dettmer (UBC)
University of British Columbia

Impact of short length veneer on bending properties of LVL
PI: Rakesh Gupta and Fred A. Kamke | Student: Skyler Mlasko (OSU), Mathias Belda (Hamburg)
Oregon State University

2008
Preparation of labeled isocyanates for wood adhesion research
PI: Charles E. Frazier | Student: Dakar Ren

Virginia Tech

Carboxymethylcellulose acetate butyrate water-dispersions as renewable wood adhesives
PI: Charles E. Frazier | Student: Jesse L. Paris
Virginia Tech

Fundamental Analysis of Wood Adhesion Primers
PI: Charles E. Frazier | Student: Joshua C. Hosen
Virginia Tech

Characterization of mixed-mode fracture testing of adhesively bonded wood specimens
PI: David A. Dillard | Student: Edoardo Nicoli
Virginia Tech

Strand dynamics during the oriented strand composites formation process
PI: Stephen M. Shaler | Student: Spencer A. Perry
University of Maine

2006
Characterization techniques for structure-property determination of in-situ lignocelluloses
PI: Charles E. Frazier | Student: Sudip Chowdhury
Virginia Tech

Characterization of Wood Resin-Adhesive Spray
PI: Douglas J. Gardner | Student: Xeulian Zhang
University of Maine

Effect of nanocrystals on phenol-formaldehyde resin
PI: Maren Roman | Student: Jung K. Hong
Virginia Tech

Photodegradation of Adhesives used in Wood Composites Materials
PI: Philip Evans | Student: Martin Meisner
University of British Columbia

Effect of Elevated Temperature on Mechanical behavior of wood-based composites
PI: Rakesh Gupta and John Nairn | Student: Arijit Sinha
Oregon State University

Nanoscale Surface Modification of Wood Veneers for Adhesion
PI: Scott H. Renneckar | Student: Yu Zhou
Virginia Tech

2005
Surface Modification and Nanocomposite additives
PI: Audrey Zink-Sharp | Student: Richard K. Johnson
Virginia Tech

Analysis of connections and LVL and PSL beams loaded perpendicular to grain
PI: Daniel. P. Hindman | Student: David E. Finkenbinder
Virginia Tech

2004
Comparison of Shear Modulus Test Methods LVL
PI: Daniel. P. Hindman | Student: S. Kate Harrison
Virginia Tech

Evaluation of Phenol Formaldehyde Resin Cure Rate
PI: Fred A. Kamke | Student: Brian C. Scott
Virginia Tech

2003
Performance and durability of PF/pMDI wood adhesive blends
PI: Charles E. Frazier | Student: Darren Riedlinger
Virginia Tech

Durability of engineered wood composites
PI: H. Michael Barnes | Student: John W. Kirkpatrick
Mississippi State

2002
Study of performance and durability issues of structural wood-based composites
PI: Joseph Loferski | Student: Jeffrey Smith
Virginia Tech

Fundamental Aspects of PF Resin Durability
PI: | Student: Jonathan Williams

Virginia Tech

Effect of Moisture Cycling on Cross-Plane Shear in OSB
PI: | Student: Nathan Deringer
University of Minnesota

2001

Understanding Interphase Chemistry in Wood/Polymer Composites
PI: Kaichang Li and John Simonsen | Student: Cheng Zhang
Oregon State University

Investigation of the association of co-steam exploded wood and plastic
PI: Wolfgang G. Glasser and Audrey Zink-Sharp | Student: Scott Renneckar
Virginia Tech

Developing new markets for composite panels
PI: | Student: Dave Gilbert
Virginia Tech

Failure behavior of wood-based composites in bending
PI: | Student: Elena V. Kultikova
Virginia Tech

Effect of Moisture Cycling on Cross-Plane Shear in OSB
PI: | Student: Sourabh Joshi
Virginia Tech

2000

Surface characterization of wood panels
PI: | Student: Jessica McLaughlin
Virginia Tech

1999

Studies of PF/pMDI hybrid adhesives
PI: Charles E. Frazier | Student: Jun Zheng
Virginia Tech

Influence of process parameters in composite manufacture
PI: Fred A. Kamke and R. Smith | Student: Keith A. Scott
Virginia Tech

Durability of PF and pMDI Adhesive Wood Composites
PI: Joseph Loferski | Student: Christopher R. Scoville
Virginia Tech

Surface characterization of wood panels
PI: Wolfgang G. Glasser and Fred A. Kamke | Student: Milan Sernek
Virginia Tech