



The 16th
Wood Adhesion Short Course
August 12-13, 2020
(CANCELLED due to COVID-19)
A Wood-Based Composites Center Short Course

Location: 107 Richardson Hall
Department of Wood Science & Engineering
Oregon State University
Corvallis, OR 97331

What you will learn:

Why does glue stick? What makes wood unique when it comes to gluing it together? The adhesive bonding of wood is becoming increasingly important as large timber becomes more and more scarce. Industries are adopting new technologies to bond wood pieces into larger elements such as flat panels, structural beams, finger-jointed lumber, furniture parts, etc. Industry professionals need to learn more about wood material science and the science of wood adhesion to effectively troubleshoot wood bonding problems and adopt new technologies.

During the course, you will learn about the:

- Basic structure of hardwoods and softwoods
- Theories of adhesion
- Material properties of wood
- Impact of wood's microstructure on adhesion
- Common wood adhesives in use today
- Influence of moisture on adhesion
- Penetration and distribution of adhesives
- Fracture and testing of bonded wood
- Surface properties and bonding of wood

This short course will introduce the basic concepts of adhesion, and then build on these concepts with specific attention to wood. Upon completion of the course, participants will better understand the unique bonding characteristics of wood. They will be better prepared to analyze existing problems and performance, and evaluate new applications.

Who Should Attend:

- Persons involved with the research and development of wood adhesive and wood composite technologies.
- Individuals who manage adhesive or composite-manufacturing processes, and who wish to sharpen their knowledge of wood and wood adhesion.
- Persons seeking an introduction to wood within the context of adhesion and composite technologies.
- Adhesive suppliers who wish to improve their ability to communicate with the forest products industry.
- Persons who have had some college level chemistry, and who are comfortable with basic chemical principles.



Agenda:

DAY ONE:

7:40 a.m.	Registration and refreshments
8:00 a.m.	Welcome and Introductions (Frazier, Kamke, Nairn)
8:10 a.m.	Overview to Adhesion Science (Frazier)
8:20 a.m.	Participant Introductions
8:30 a.m.	Basic Structure of Hardwoods and Softwoods/Micro-Structure of Wood (Kamke)
10:00 a.m.	Break
10:20 a.m.	Material Properties of Wood and Bonded Wood (Nairn)
11:30 p.m.	Lunch
12:30 p.m.	Surfaces: Solids and Liquids (Frazier)
1:30 p.m.	Adhesive Stress State and Adhesive Testing (Nairn)
2:15 p.m.	Break
2:35 p.m.	Introduction to Polymer Science (Frazier)
3:40 p.m.	Wood and Water Relationships (Kamke)
5:05 p.m.	Questions and Discussion Day One Wrap-up
Optional	Group Dinner @ a local restaurant



DAY TWO:

- 7:45 a.m. Refreshments
- 8:00 a.m. Introduction to Wood Adhesives (Frazier)
- 8:50 a.m. Adhesive Distribution and Penetration (Kamke)
- 10:00 a.m. Break
- 10:20 a.m. Introduction to Wood Adhesives, continued (Frazier)
- 11:05 a.m. Simple Design and Fracture of Bonded Wood (Nairn)
- 11:50 a.m. Lunch
- 1:00 p.m. Adhesive Viscometry (Frazier)
- 1:30 p.m. Break into Groups, Transition to Laboratory Exercises:
Group A: Simple Design and Fracture of Bonded Wood (Nairn)
Group B: Microscopic Analysis (Kamke and Frazier)
- 2:30 p.m. Group Photo and Break
- 2:55 p.m. Lab Exercises:
Group A: Microscopic Analysis (Kamke and Frazier)
Group B: Simple Design and Fracture of Wood (Nairn)
- 3:45 p.m. Tour: New Facilities and Laboratory Space
- 4:30 p.m. Questions and Discussion
Course Evaluation and Wrap-up, Adjourn

About the Instructors:

Dr. Chip Frazier is the Thomas M. Brooks Professor in the Department of Sustainable Biomaterials at Virginia Tech and is the Co-Director of the Wood-Based Composites Center. He specializes in adhesives and adhesion.

Dr. Fred Kamke is Professor and JELD-WEN Chair of Wood-based Composites Science in the Department of Wood Science and Engineering at Oregon State University. He is the Co-Director of the Wood-Based Composites Center. Dr. Kamke specializes in composite manufacture, resin penetration and distribution, and wood and water relationships.

Dr. John Nairn is Professor and Richardson Chair in the Department of Wood Science and Engineering at Oregon State University. He specializes in mechanics and fracture of wood and wood-based composites. Before coming to Oregon, he specialized in deformation and fracture of polymers and polymer-based composites.



Cost:

The cost for the two-day short course is \$795.00 per person. Members of the Wood-Based Composites Center are eligible for a reduced fee of \$675.00. The registration fee includes workshop materials, lunch and refreshments during the class.

Travel Information and Lodging:

You are responsible for making your own lodging reservations. A block of rooms has been reserved for participants at the [Courtyard Marriott Corvallis](#), 400 SW 1st Street, Corvallis, Oregon at a discounted rate of \$139.00/night, single or double occupancy. Reservations can be made [online through the Marriott system](#), or by calling 541-753-0199 or toll-free at 1-800-321-2211. Be sure to ask for the “Wood Adhesion Short Course” room block. Reservations must be made **on or before Tuesday, July 21, 2020**. Rooms will be released to the public at this time and the special rate will no longer be offered.

Use the Portland (PDX), or Eugene (EUG), Oregon airport if air travel is required. You can download driving directions to the Courtyard Corvallis from their website (www.marriott.com/eugco). Shuttle service to/from PDX is available from Groome Transportation (<https://groometransportation.com>) for about \$80 roundtrip. Shuttle services from EUG are available from Hub Airport Shuttle (<https://hubairportshuttle.com>) for about \$150 roundtrip, with deeply discounted fares for additional riders. Both shuttles will bring you to the Courtyard Corvallis; advanced reservations are required.

For More Information:

Contact Linda Caudill, Managing Director, Wood-Based Composites Center, at 540-231-7092 or by email at lcaudill@vt.edu.

To Register:

Registration is available until space is sold out or **until Monday, July 27, 2020**. [Register on-line](#), or visit the WBC website at <http://www.wbc.vt.edu>.

For personal assistance, contact the Virginia Tech Continuing and Professional Education office:
Conference Registration
810 University City Blvd., Suite D
Blacksburg, VA 24061
Phone: 540-231-5182

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