

Curriculum Vitae

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<http://biobasedbuilding.info/>

Education	Ph.D. <i>University of British Columbia, Vancouver, Canada</i>	Nov. 2001
	<ul style="list-style-type: none">• <i>Major Field:</i> Engineering Mechanics specializing in wood• <i>Minor Field:</i> Structural Engineering• <i>Thesis:</i> "Computational Modeling of Strand-based Wood Composites" <http://www.lulu.com/product/paperback/strength-modeling-structural-composite-lumber/11020863><ul style="list-style-type: none">- I developed a stochastic finite element based method to simulate the mechanical behavior of strand-based wood composite lumber.	
	M.A.Sc. <i>University of British Columbia, Vancouver, Canada</i>	May, 1996
	<ul style="list-style-type: none">• <i>Major Field:</i> Engineering Mechanics specializing in wood• <i>Minor Field:</i> Structural Engineering• <i>Thesis:</i> "The Tsai-Wu Strength Theory for Douglas-fir Laminated Veneer" <https://open.library.ubc.ca/cIRcle/collections/ubctheses/831/items/1.0075176><ul style="list-style-type: none">- I compared a variety of multi-axial strength theories to evaluate their suitability for Laminated Veneer Lumber (LVL).	
	B.A.Sc. <i>University of British Columbia, Vancouver, Canada</i>	May, 1989
	<ul style="list-style-type: none">• <i>Concentration:</i> Structural Engineering	
Work Experience	University of Massachusetts, Amherst	
	Professor, Dept. of Environmental Conservation	Sept. 2019-present
	Associate Professor, Dept. of Environmental Conservation	Sept. 2008-2019
	Assistant Professor, Dept. of Environmental Conservation	Sept. 2001–2008
	Adjunct Faculty, Dept. of Civil and Environmental Engineering	Sept. 2003–Present
	Adjunct Faculty, Dept. of Architecture	Sept. 2005–Present
	<ul style="list-style-type: none">• <i>Responsibilities:</i> I teach interdisciplinary undergraduate and graduate courses and conduct collaborative research towards efficient and safe use of bio-based building materials. I also serve on national professional review panels and committees.	

Trus Joist MacMillan Ltd. Surrey, B.C. Canada
Engineer in Training and Professional Structural Engineer

June 1989–Aug. 1993

- *Responsibilities:* I reviewed and sealed shop drawings, designed atypical trusses, designed structural repairs, engineered truss and connection details and co-supervised/trained a team of 10 draftsmen and 6 salesmen in an engineering support department.

Teaching Experience	Courses Taught <i>University of Massachusetts, Amherst</i>	2001 - present
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1. **Mechanics of Building Materials for Construction (BCT 330, 4cr)**, 2002 to present
 - On Moodle. This is an interdisciplinary class designed for students of construction technology and architecture. Students learn to analyze internal forces and stresses in statically determinate truss systems, beams, and columns. Case studies and practical applications are employed throughout the course through in-class examples and illustrations, homework assignments and tutorial sessions
2. **Tectonics 2 (ARCH 650, 3cr)**, 2005 to present
 - On Moodle. This course is cross-listed with Mechanics of Building Materials for Construction for students of Architecture. Course topics, objectives and website are the same as listed above for BCT 530.
3. **Design of Wood Structures (BCT 540, 3cr)**, 2003 to present
 - On Moodle. This is an interdisciplinary class designed for graduate students in architecture and building and undergraduate students in engineering. Students learn to describe and apply design techniques for individual wood components, including: beams, columns, trusses, wood/steel connections, and diaphragms, using both conventional lumber products as well as state-of-the-art engineered wood products. Students also work in interdisciplinary teams to compete in design/build competitions.
4. **Readings in Sustainable Building Systems (BCT 692S, 3cr)**, co-taught 2019 to present
 - On Moodle. This course provides an overview of the breadth, and an introduction to the depth of research, in Sustainable Building Systems and serves as a primer for all graduate students in our program. Students read and discuss current publications with each member of the graduate faculty.
5. **Wood Design Studio (BCT 397B/597F, 1-3cr)** alternate years
 - This course follows an inquiry-based learning format where students of engineering, construction technology, and architecture work together to design, build and test structures, explore questions, develop and research hypotheses, reflect on their own learning and gain a deeper understanding of course concepts to become better critical thinkers. <http://blogs.umass.edu/bct597f-clouston/>
6. **Problem Solving in Mechanics (BCT597BM, 1cr)**, 2013 to 2018
 - This is a lab component for BCT330 where students work in teams to solve mechanics problems as well as test material strength properties
7. **Eco-Friendly Building (Honors 391A, 1cr)**, 2012
 - This was an interdisciplinary seminar which focused on different sustainable design strategies used in the building industry.

8. **Bio-based Building Lab (BCT 597F & ECO 697F, 3cr)** (alternate years)
 - Students of Architecture, Engineering and Construction study, invent, design, build and structurally test laminated and cast composites made from natural materials.
9. **Principles of Light-Frame Structure Technology (BCT 313, 3cr)**, co-taught in 2001
 - Introduced concepts of force, moment and equilibrium for trusses and light-frame structures.
10. **Building Materials Computing (BCT 452, 3cr)**, co-taught in 2001
 - Taught applications in design (beams, columns, and floor/roof layouts) using various structural analysis software packages.

Teaching Assistant

1996-2000

University of British Columbia, Vancouver, Canada

- Mechanics of Wood Products (Wood 376)
 - I ran a 2 hour weekly problem-solving tutorial session and marked weekly assignments. Course topics included statics, axial and beam stress and strain, Hooke's law, geometric section properties, transformed section analysis, and plastic section analysis.
- Applied Mechanics of Materials (Wood 386)
 - I organized and supervised the term project which entailed design, construction, and testing of three pedestrian timber bridges (one per team).

**Funded
Research
Projects/
Contracts**

1. **Clouston P.** Massachusetts Government Executive Office of Energy & Environmental Affairs (EOEEA). "Design Fabrication and Testing of CLT Pre-Qualification panels" 2017-2019. \$310,351
2. **Clouston P.** Unrestricted Grant for Wood on the Plaza Project 2016 (\$5000 + in-kind services and materials) total \$15,000
3. **Clouston P,** Arwade S, Schreyer A. NSF-CMMI Structural and Architectural Engineering (SAE) Program "Cross Laminated Timber Panels from Low-value Eastern Woods" 2015-2019. \$390,925.
4. **Clouston P,** Catanzaro P. USDA (NIFA – National Institute of Food and Agriculture). Experiment Station, UMass. "Low-value Local Wood in Bamboo-reinforced Glulam." 2013-2017, \$60,000
5. Hoque S., **Clouston P,** Weil B. and Kelty M. USDA (NIFA – National Institute of Food and Agriculture). Experiment Station, UMass. "Sustainable Performance: measuring how buildings and construction materials affect energy and climate in New England." 2013-2016, \$45,000
6. **Clouston P,** Arwade S. NSF-CMMI Division of Civil, Mechanical and Manufacturing Innovation Competitive Grants program. "Modeling the Design Limit States of Structural Composite Lumber", 2009-2012, \$318,041

7. **Clouston P**, USDA, Cooperative State Research Education and Extension Service (CSREES), Multistate Research Fund (MRF) project NE-1037 – Wood Utilization Research, 2009-2011, \$45,000
8. **Clouston P**. Stanley BOSTITCH. Pallet stringer repair using corrugated fasteners and plates, 2010, \$5900
9. **Clouston P**. Plycem Company, Cartago, Costa Rica. Evaluation of Mechanical Behavior of Wood-Fiber Cement When Subjected to Freeze/Thaw Cycles in New England, 2007-2008, \$16,400
10. **Clouston P**. Unrestricted Grant for Research in Support of Wood Structures Symposium from 2007-2011 (I-Level by Weyerhaeuser, WA. \$16,000, FastenMaster, MA \$4000, Nordic Engineered Wood, CA \$4000) total \$24,000
11. **Clouston P**. USDA, Agricultural Experimental Station, University of Massachusetts, Investigation of Mill Renovation in Massachusetts using Wood-Concrete Composites, 2005-2008. \$45,000
12. **Clouston P**. FastenMaster, Agawam, MA. Evaluation of Mechanical Properties of Floor Truss and Structural Insulated Panel Fasteners, 2007. \$5000
13. **Clouston P**. Private Contract. Evaluation Mechanical Properties of Pinus Maximinoi from Coban, Guatemala, 2007, \$1000
14. **Clouston P**. USDA, Agricultural Experimental Station, University of Massachusetts, Computational Modeling of Mechanical Properties of Structural Composite Lumber, 2001-2006. \$75,000
15. **Clouston P**. Faculty Research Grant, University of Massachusetts, Pilot Study of a Wood-Concrete Composite System, 2003-2005. \$13,000
16. **Clouston P** International Forest Products. Evaluation of Mechanical Properties of Balsa Wood from Equador, 2003. \$5000
17. Kane B. **Clouston P**. CR-19340-443947 #1, Virginia Technology Institute, Testing Shade Trees for Failure Stresses and Patterns, 2003. \$6000

Book & Book Chapter Publications

1. **Clouston P**. 2019. Chapter 6.5 Timber and Concrete. In book: Off-site and Industrialized Timber Construction. Delivering Quality and Efficiency (2nd edition). Publisher: BM TRADA. ISBN 978-1-909594-81-4.
2. Brause C; **Clouston P**; Darling N. 2019. Integration + Innovation, Proceedings of Building Technology Educator's Society Conference: Vol. 2019, Amherst, MA. Available at: <https://scholarworks.umass.edu/btes/vol2019/iss1/56>

3. **Clouston P**, Arwade SR, Amini A. 2014. Bio-Based Composites: from Nature to Engineering Materials, Ch. 14: "Modeling and characterization of laminated bio-based composites for structural use". CRC Press. Taylor and Francis Group, 26p. Catalog number (K21755) and ISBN (978-1-4822-1448-2)
4. **Clouston P**. 2010. Strength Modeling of Structural Composite Lumber. United States: Lulu.com, ISBN: 978-0-557-47704-3, 148 pages
5. **Clouston P**, Mann R, Schreiber S. 2009. Without a Hitch - New Directions in Prefabricated Architecture. Proceedings for 2008 Northeast Fall Conference of the Association of Collegiate Schools, UMass Amherst MA: Lulu.com, ISBN: 978-0-557-08075-5, 332 pages

**Refereed
Journal
Publications**

1. O'Donnell, F. A., Arwade, S. R., & Clouston, P. L. 2022 "3D Probabilistic Model for Knot Geometry and Distribution for use in Cross Laminated Timber." Elsevier: Wood Science and Technology, in press
2. O'Donnell, F, Arwade, S, & **Clouston, P**. 2022. "Application of Variability Response Function to Cross Laminated Timber." Probabilistic Engineering Mechanics, 67, 103177.
3. Rivera-Cruz, J, Breña, S, Gerasimidis, S, & **Clouston, P**. 2021. "Behavior of Perimeter Beams with Integrity Reinforcement Details of Low Seismic Regions." Structural Journal, 118(6), 203-214. ACI Structural Journal.
4. Bahmanzad A, **Clouston P**, Arwade S, Schreyer A. 2020. "Shear Properties of Symmetric Angle-ply Cross Laminated Timber (CLT) Panels." ASCE Journal of Materials in Civil Engineering, 32(9), 04020254.
5. Bahmanzad, A, **Clouston, P**, Arwade, S, & Schreyer, A. 2020. "Shear Properties of Eastern Hemlock with Respect to Fiber Orientation for Use in Cross Laminated Timber." ASCE Journal of Materials in Civil Engineering, 32(7), 04020165.
6. Kaboli H, **Clouston P**, Lawrence S. 2020. "Feasibility of Two Northeastern Species in three-layer ANSI Approved Cross Laminated Timber." ASCE Journal of Materials in Civil Engineering. 32(3), 04020006
7. Schreyer A, **Clouston P**. 2019. J.W. Olver Design Building - A Case Study of a US Mass Timber Building. Wood Design Focus Journal. pp. 10
8. Khoshbakht N, **Clouston P**, Arwade SR, Schreyer AC. 2019. "Evaluation of ASTM D5764 Dowel Connection Tests for Laminated Veneer Bamboo (LVB)." ASTM Journal of Testing and Evaluation, 47(4).
9. Kaboli H, & **Clouston, P**. 2018. "Eastern Hemlock in Bamboo-Reinforced Glulam." Journal of Materials in Civil Engineering, 31(1), 04018335.
10. Al-Sammari AT, **Clouston P**, Breña SF. 2018. "Finite-Element Analysis and Parametric Study of Perforated Steel Plate Shear Connectors for Wood-Concrete Composites." Journal of Structural Engineering, 144(10), 04018191.
11. Khoshbakht N, **Clouston P**, Arwade SR, & Schreyer AC. 2017. "Computational Modeling of Laminated Veneer Bamboo Dowel Connections." Journal of Materials in Civil

Engineering, 30(2), 04017285.

12. Koh RS, and **Clouston P.** 2017. "In-Plane Shear Properties of Laminated Wood from Tension and Compression Tests of Angle-Ply Laminates." Journal of Materials in Civil Engineering, 29(11), 04017214.
13. Amini A, Arwade SR, & **Clouston P.** 2017. "Modeling the Effect of Void Shapes on the Compressive Behavior of Parallel-Strand Lumber." ASCE Journal of Materials in Civil Engineering, 29(9), 04017129.
14. Brojan L, **Clouston P.** 2017. "Straw Bale Building and its Economic Perspective" Open House International, Vol. 42, No. 1, pp. 23-28.
15. Witayakran S, Smitthipong W, Wangpradid R, Chollakup R, **Clouston P.** 2016. "Natural Fiber Composites: Review of Recent Automotive Trends". In: Saleem Hashmi (Editor-in-Chief). Reference Module in Materials Science and Materials Engineering, Oxford: Elsevier; p.1-9
16. Brojan L, Weil B, **Clouston P.** 2015. "Air Tightness of Straw Bale Construction." Journal of Green Building, Vol. 10, No. 1, pp. 99-113.
17. Amini A, Arwade SR, **Clouston P.**, Rattanaserikiat S. 2014. "Characterization and Probabilistic Modeling of the Mesostructure of Parallel Strand Lumber" ASCE Journal of Materials in Civil Engineering. DOI: 10.1061/(ASCE)MT.1943-5533.0001116.
18. Brojan L., **Clouston P.** 2014. "Effect of Plaster Type and Loading Orientation on Compression Behavior of Straw Bales for Construction". ARPN Journal of Engineering & Applied Sciences,9(9).
19. Disén K. and **Clouston P.** 2014. "Building with Bamboo: a Review of Culm Connection Technology." Journal of Green Building, 8(4), 83-93
20. Yang Z, **Clouston P.**, and Arwade S R. 2014. "Torsional Shear Strength and Size Effect in Laminated Veneer Lumber," ASTM Advances in Civil Engineering Materials, Vol.3, No. 1, pp. 1-11
21. Brojan L, Petric, A, **Clouston P.** 2013. "A Comparative Study of Brick and Straw Bale Wall Systems from Environmental Economical and Energy Perspectives." ARPN Journal of Engineering & Applied Sciences 8(11) pp. 920-926
22. **Clouston P.**, Quaglia C. 2013. "Experimental Evaluation of Epoxy based Wood-Concrete Composite Floor Systems for Mill Building Renovations." International Journal of the Constructed Environment, Vol. 3, pp.63-74
www.constructedenvironment.com, ISSN: 2154-8587
23. Yang Z, **Clouston P.**, Schreyer A. 2013. "Torsional Shear Tests on Laminated Veneer Lumber using a Universal-type Test Machine" ASCE Journal of Materials in Civil Engineering, Vol. 25, Iss. 12, pp. 1979 - 1983.
24. **Clouston P.**, Schreyer A. 2012. "Experimental Evaluation of Connector Systems for Wood Concrete Composite Floor systems in Mill Building Renovations." International Journal of the Constructed Environment, Volume 2, Issue 1, pp.131-144.
25. Mahdavi M., **Clouston P.**, Arwade S. 2012. "A Low-technology Approach toward Development of Laminated Bamboo Lumber", Elsevier: Construction and Building

Materials, Vol. 29, pp. 257–262

26. Mahdavi M, **Clouston P**, Arwade S. 2011. "Development of Laminated Bamboo Lumber: a review of processing, performance and economic considerations." ASCE, Journal of Materials in Civil Engineering, Vol. 23, No. 7, July 1, pp. 1036-1042
27. Arwade S, **Clouston P**, Krupka M. 2011. "Length Effects in the Orthogonal Directions of Structural Composite Lumber." ASTM Journal of Testing and Evaluation, Vol. 39, Issue 4, July
28. Reed T, **Clouston P**, Hoque S, Fiset P. 2010. "An analysis of LEED and BREEAM assessment methods for educational institutions." Journal of Green Building, Vol. 5, No. 1, pp. 1-23
29. Arwade S, Winans R, **Clouston P**. 2010. "Variability of the compression strength of parallel strand lumber." Journal of Engineering Mechanics, Vol. 136, No. 4, April 1, pp. 405-412
30. Arwade S, **Clouston P**, Winans R. 2009. "Measurement and stochastic computational modeling of the elastic properties of parallel strand lumber." Journal of Engineering Mechanics, Vol. 135, No.9, 2009, p. 897-905
31. **Clouston P**, Schreyer A. 2008. "Design and Use of Wood-Concrete Composites". ASCE Practice Periodical on Structural Design and Construction, 13(4), pp. 167-175
32. Kane B, **Clouston, P**. 2008. "Tree Pulling Tests of Large Shade Trees in the Genus *Acer*". Journal of Arboriculture and Urban Forestry, 34(2), 2008, pp. 101-109
33. **Clouston P**. 2007. "Characterization and Strength Modeling of Parallel Strand Lumber". Journal Holzforschung, Vol. 61, pp. 394-399
34. Damery D, **Clouston P**, Fiset P. 2007 "Wood science education in a changing world: A case study of the UMASS-Amherst building materials & wood technology program, 1965-2005". Forest Products Journal. 57(5) pp. 19-24
35. Peters J, Damery D, **Clouston P**. 2006. "A Decade of Innovation in Particleboard and Composite Materials: a Content analysis of Washington State University's *International Particleboard/Composite Materials Symposium Proceedings*". Journal of Forest Products Business Research 3(1), 13p.
36. **Clouston P**, Schreyer A. 2006." Wood Concrete Composites: A Structurally Efficient Material Option". Civil Engineering Practice. Boston Society of Civil Engineers (BSCE) Section / American Society of Civil Engineers (ASCE). Spring/Summer 2006, pp. 5-22
37. **Clouston P**, Bathon L, Schreyer A. 2005. "Shear and Bending Performance of a Novel Wood-Concrete Composite System". ASCE Journal of Structural Engineering. 131(9), pp.1404-1412
38. **Clouston P**, Civjan S, Bathon L. 2004. "Experimental Behavior of a Continuous Metal Connector for a Wood-Concrete Composite System". Forest Products Journal. 54(6) pp. 76-84
39. Burnett DT, **Clouston P**, Damery D, Fiset P. 2003. "Structural Properties of Pegged Timber Connections as Affected by End Distance". Forest Products Journal. 53(2) pp. 50-57

40. **Clouston P**, Lam F. 2002. "A Stochastic Plasticity Approach to Strength Modeling of Strand-based Wood Composites". Composites Science and Technology, 62, pp. 1381-1395
41. **Clouston P**, Lam F. 2001. "Computational Modeling of Strand-based Wood Composites." ASCE Journal of Engineering Mechanics. 127(8), pp. 844-851
42. **Clouston P**, Lam F, Barrett JD. 1998. "Interaction Term of Tsai-Wu Theory for Laminated Veneer." ASCE Journal of Materials in Civil Engineering, 10(2), pp. 112-116
43. **Clouston P**, Lam F, Barrett JD. 1998. "Incorporating Size Effects in the Tsai-Wu Strength Theory for Douglas-fir Laminated Veneer". Wood Science and Technology, 32, pp. 215-226

**Conference
Papers/Posters
&
Non-refereed
Publications**

44. Birdsey R, **Clouston P**, Dalzell J., Drobnack J., ... McLain R., O'Connor B., Rerschel R., Savage J., Smith E., Sprague E. 2021. Mass Timber: An Important Climate Solution and Economic Opportunity for Central New England & Eastern New York. June. pp. 12. <https://www.masstimberregionaldialogue.com/>
45. Bahmanzad A, **Clouston P**, Arwade, SR, & Schreyer A. 2018. "Measurement of Shear Properties of Eastern Hemlock Using Two-Plate Sher Test." In: Proceedings of the 72nd Forest Product Society (FPS) International Conference, Madison, WI, United States, June 11–14. (presentation & paper - 8 pgs)
46. **Clouston P**, Arwade S, Kaboli H, O'Donnell F. 2017. "Probabilistic Characterization of Defects and Elastic Modulus in Cross Laminated Timber Lam Stock." In: Proceedings of the 12th International Conference on Structural Safety & Reliability. ICOSAR Vienna, Austria 6-10 August 2017. (presentation & paper - 10 pgs)
47. Chadwell C, Gershfeld M, Kam-Biron M, Lawson J, Perkins B, Barnes C, **Clouston P**, Dong K, Kukay B, Pei S, Thompson D, Fernholz K. 2017. "Wood Education Symposium Report of Outcomes. American Wood Council. 24 pgs. (symposium proceedings)
48. Fiocchi L, Schreyer A, **Clouston P**. 2017. "A New Teacher on Campus". *Learning By Design*, pp 20-25. URL: <https://goo.gl/F6FmR8> (magazine article)
49. **Clouston P**, Schreyer A. 2016. "UMass Design Building: A Catalyst for Regional Change." In: Proceedings of the World Conference on Timber Engineering (WCTE 2016), Vienna, Austria (presentation & paper - 8 pgs)
50. Koh R, **Clouston P**, Heyers R, Lackner M. 2016. "Yield Criteria Assessment of Angle-ply Wood Laminates for use in Offshore Wind Turbine Blades." In: Proceedings of the 2016 World Conference on Timber Engineering (WCTE 2016), Vienna, Austria (presentation & paper - 8 pgs)
51. Bahmanzad A, **Clouston P**. 2016 "Retrofit of mill buildings with wood-concrete composite systems: Structural analysis and performance benefits." Prepared for the City of Holyoke, MA as part of the Renewable Energy Development Plan. May 2016 13 pp. (technical report)

52. **Clouston P.** 2016. "UMass Amherst Students Build Timber Grid Shell as Pop-up Exhibition on Fine Arts Center Plaza" <<https://www.umass.edu/newsoffice/article/umass-amherst-students-build-timber-grid>> (news article).
53. **Clouston P.** 2015. "Wood on the Plaza" Western Mass American Institute of Architecture (WMAIA) newsletter article.
54. Schreyer A. and **Clouston P.** 2015. "Timber Architecture Redefined at UMass" Western Mass American Institute of Architecture (WMAIA) newsletter article. June
55. Brojan L., **Clouston P.** 2015. "Advantages and Disadvantages of Straw Bale Building." Magazine AR Architecture Research. Published by the University of Ljubljana, Faculty of Architecture ISSN 1581-6974. 5pgs. (paper)
56. **Clouston P.** 2014. "Building Big with Wood. The Woodland Steward. Massachusetts Forest Alliance, August. (journal article)
57. **Clouston P**, Meidani M. 2014. "Experimental and numerical evaluation of circular holes on shear strength of structural composite lumber," In: Proceedings of the World Conference on Timber Engineering." Quebec City, August 10-14 pp. 1-7. (paper and presentation)
58. Koh R, **Clouston P**, Heyers R, Lackner M. 2014. "Wood Composites for Utility Scale Wind Turbine Blades: a Rationalization for Wood." In: Proceedings of the World Conference of Timber Engineering, Quebec City, August 10-14 pp. 1-8. (paper and presentation)
59. **Clouston P.** 2014. Principles of Structural Design: Wood, Steel, and Concrete, Taylor and Francis, Boca Raton, FL Second Edition. 2pgs (Book review)
60. Yang B. Z., **Clouston P.** and Schreyer A. 2013. "Torsional Shear Tests on Laminated Veneer Lumber using a Universal-type Test Machine." 18th Nondestructive Testing and Evaluation of Wood Symposium, Madison, Wisconsin, Sept 24-27 (poster and presentation)
61. Arwade SR, Amini A, **Clouston P.** 2013. "Stochastic characteristics and modeling of structural composite lumber" In: Proceedings of the 11th International Conference on Structural Safety & Reliability (ICOSSAR), New York, June 16-20. pp. 1-6 (paper and presentation)
62. Beauregard, E.; **Clouston, P.**; Arwade, S. 2012. "Finite Element Analysis of Wood-Concrete Composite with Continuous Metal Connector." In: Proceedings of the 66th International Forest Products Society Convention. Washington DC, June 4-7. pp. 1-8. (paper and presentation)
63. Amini. A.; Arwade, SR.; ***Clouston, P.** 2012 "Study of the Effect of Void Shape on Nonlinear Compressive Behavior of PSL" In: Proceedings of the 66th International Forest Products Society Convention – Washington DC, June 4-7 (poster and presentation)
64. **Clouston, P.**; Arwade, S. 2012. "Modeling the Design Limit States of Structural Composite Lumber" In: Proceedings of the National Science Foundation CMMI Engineering Research and Innovation Conference, Boston, MA, July. (poster and presentation)
65. **Clouston P**, Arwade S, Krupka M, Rattanaserikiat S, Amini A. 2011 "Microstructure and size effect in structural composite lumber." NSF CMMI Grantees Conference, Atlanta (poster)

66. **Clouston P**, Schreyer A. 2011. "Truss plates for use as shear connectors in laminated veneer lumber -concrete composite systems." In: Proceedings of the Structures Congress, Las Vegas, Nevada, April 14-16. (paper and presentation)
67. **Clouston P**, Arwade S, Krupka M, Rattanaserikiat S, Amini A. 2011 "Modeling the design limit states of structural composite lumber." NSF CMMI Grantees Conference, Atlanta (poster)
68. **Clouston P**, Arwade S, Kupka M. 2010 "Length Effects in the Orthotropic Directions of Structural Composite Lumber." World Conference in Timber Engineering, Trentino, Italy (paper and presentation)
69. Arwade S, Winans R, **Clouston P**. 2009 "Measurement and modeling of spatially varying strength in Parallel Strand Lumber." In: Proceedings of the 10th U.S. National Congress for Computational Mechanics, Columbus, Ohio (paper)
70. **Clouston P**. 2008. "Pedagogic Strategies for Wood Engineering in an Interdisciplinary Setting". Structures Congress, Vancouver, Canada. pp. 1-5. (paper and presentation)
71. **Clouston P**, Liu S. 2006. "Predicting the Influence of Macro-Void Distribution in Parallel Wood Strand Composites". World Conference of Timber Engineering, Portland, Oregon. pp. 1-7. (paper and presentation)
72. **Clouston P**. 2004. "Numerical Simulation of Mechanical Behavior of Parallel Strand Lumber". In: Proceedings of the World Conference of Timber Engineering, Lahti, Finland pp. 1-6. (paper and presentation)
73. Bathon L, **Clouston P**. 2004. "Experimental and Numerical Results on Semi Pre-stressed Wood-Concrete Composite Floor Systems for Long Span Applications". In: Proceedings of the World Conference of Timber Engineering, Lahti, Finland. pp. 1-5 (paper and presentation)
74. Peters J, Damery D, **Clouston P**. 2004. "Residential timber framing as a value-added approach to private non-industrial forest ownership". In: Proceedings of the World Conference of Timber Engineering, Lahti, Finland. pp. 1-6 (paper and poster presentation)
75. **Clouston P**, Lam F. 2000. "Computational Modeling of Strand-based Wood Composites in Compression". In: Proceedings of the World Conference on Timber Engineering, Whistler Resort, British Columbia, Canada (paper and presentation)
76. **Clouston P**, Lam F, Barrett JD. 1996. "On the Tsai-Wu Strength Theory for Douglas-fir Laminated Veneer". In: Proceedings of the 4th International Wood Engineering Conference, New Orleans, Louisiana, USA (paper and presentation)

**Conference
Abstracts /
Presentations**

77. O'Donnell F, Arwade S, **Clouston P**. 2019. "A Finite Element Approach to Investigating the Influence of Knots on Cross Laminated Timber. Compwood" International Conference on Computational Methods in Wood Mechanics - from Material Properties to Timber Structures. Växjö, Sweden. June 17-19 (abstract and presentation)

78. O'Donnell F, Kaboli H, **Clouston P**, Arwade S 2018. "A Probabilistic Model for the Distribution of Knot Defects in Cross Laminated Timber Lamstock" Engineering Mechanics Institute Conference. MIT, Cambridge, MA. (abstract and presentation)
79. 2018. O'Donnell F, Kaboli H, **Clouston P**, Arwade SR. 2017. "Defects, material properties and mechanics of cross-laminated timber with eastern hemlock as a constituent", ASCE Engineering Mechanics Institute Conference, San Diego, CA (abstract & presentation)
80. Khoshbakht N, **Clouston P**, Arwade S, Schreyer A. 2017. "Failure Analysis of Laminated Veneer Bamboo (LVB) Dowel Connections." 19th International Conference on Civil Engineering and Applied Mechanics. World Academy of Science, Engineering and Technology Conference, 24-25 April, 19(4) Part XVII, Boston, MA (abstract & presentation)
81. Kaboli H., **Clouston P**. 2016. "Low Grade Eastern Hemlock in Bamboo reinforced Glulam" 70th Forest Products Society International Convention Portland Oregon, USA FPS (abstract & presentation)
82. Koh R, **Clouston P**, Heyers R, Lackner M. 2016. "Yield Criteria Assessment of Angle-ply Wood Laminates for use in Offshore Wind Turbine Blades." 17th Annual International Conference on Experimental Mechanics (ICEM), Rhodes Greece July 3-7. (abstract & presentation)
83. Arwade SR, Zhang G, **Clouston P**. 2014. Characterization and modeling of the micro- and nanostructure of structural composite lumber, EMI 2014 Engineering Mechanics Institute Conference, Hamilton, Ontario, August 5-8 (abstract and presentation)
84. Koh R, **Clouston P**, Heyers R, Lackner M. 2014. "Wood Composites for Utility Scale Wind Turbine Blades: Rationalization, Development and Mechanical Testing of Angle-Ply Laminated Veneer Lumber", 1st International Conference on Mechanics of Composites, Stony Brook University, June 9-12 (abstract and presentation)
85. Brojan L., **Clouston P**. 2013. "Advantages and Disadvantages of Straw Bale as a Building Material." Fourth International Conference on the Constructed Environment, Lisbon, Portugal, September (abstract and presentation)
86. Yang, B, **Clouston, P**. 2013. "Adaptation of a Universal-type Test Machine for Torsion Shear Tests on Laminated Veneer Lumber" Forest Products Society 67th International Convention, Austin TX June 9-11 (abstract and presentation)
87. Amini A, Arwade SR, **Clouston P**, Rattanaserikiat S. 2013. "Characterization and Probabilistic Modeling of Three Dimensional Voids in Parallel Strand Lumber." ASCE-EMI Engineering Mechanics Conference, Northwestern University, Evanston, IL August 4-7 (abstract and presentation)
88. **Clouston, P**. 2011 "Sustainable Building Materials: Emerging Technologies" 2011 Wood Structures Symposium, UMass, Amherst. (presentation)
89. Amini A, Arwade S, **Clouston P**, Rattanaserikiat S. 2011 "Characterization and Probabilistic Modeling of Three Dimensional Voids in Parallel Strand Lumber." ASCE-EMI Eng. Mechanics Conference, Boston, June (abstract and presentation)

90. Yang Z, **Clouston P**, and Arwade S. 2011 "Torsional Shear Strength and Size Effect of Structural Composite Lumber." Forest Products Society 65th International Convention, Portland, Oregon, June (abstract and presentation)
91. Arwade S, Winans R, **Clouston P**. 2009 "Modeling strength variability in Parallel Strand Lumber." International Conference on Structural Safety and Reliability, Osaka, Japan (abstract and presentation)
92. **Clouston P**. 2006. "Characterization and Strength Modeling of Parallel Strand Lumber". 7th World Congress on Computational Mechanics, Los Angeles, California (abstract and presentation)
93. **Clouston P**, Lam F. 2001. "Computational Modeling of Strand-based Wood Composites". Society of Experimental Mechanics, Portland, Oregon, USA (abstract and presentation)
94. **Clouston P**, Lam F. 2001. "Nonlinear Modeling of Strand-based Wood Composites in Bending". International Conference of Advanced Engineered Wood Composites, Bethel, Maine, USA (abstract and presentation)

Invited Presentations

1. **Clouston P**. 2021. Presenter/Panelist on webinar entitled "Material Worlds" by the Ambasz Institute, Museum of Modern Art (MoMA), New York, NY. (3 day effort)
https://www.youtube.com/watch?v=FbrlVhwwW_c
2. **Clouston P**. 2021. "The John W. Olver Design Building @ UMass Amherst and New England Species Mass Timber" <https://extension.unh.edu/blog/23rd-annual-blackfly-breakfast-june-17th-2021>
3. **Clouston P**. 2021. Mass Timber | An Important Climate Solution and Economic Opportunity for Central New England and Eastern New York. Regional Dialogue on Incentivizing Mass Timber. Webinar. <https://www.masstimberregionaldialogue.com/resources>
4. **Clouston P**. 2021. "Mass Timber and The John W. Olver Design Building @ UMass Amherst " Turner Construction in-house training presentation
5. **Clouston P**. 2021. "Local Species Mass Timber + other Emerging Bio-Based Building Technologies." Timber+ Industry Forum. Simpson Gumpertz and Heger Engineering, Boston. Webinar.
6. **Clouston P**. 2021. "The John W. Olver Design Building: the Story Behind the Building." Forest-to-Cities Climate Challenge., New England Forestry Foundation (NEFF) Virtual Event.
7. **Clouston P**, 2020: "#MassTimber & the Olver Design Building". Webinar by Built Environment Plus. <https://builtenvironmentplus.org/event/against-the-grain-designing-and-building-with-cross-laminated-timber/> May 1
8. Perkins A, **Clouston P**, Chung T. 2019. "Mass Timber Construction: What Why and How." Greenbuild International Conference and Expo. Atlanta, Georgia, November 19-22.

9. **Clouston P**, 2019. "Research on Mass Timber at the Olver Design Building ", Mass. Forest Alliance Annual Meeting. Westborough, MA. October 26
10. **Clouston P**. 2019. "Timber-Concrete Composite Floor Technology: Research Design and Implementation" WoodWorks Webinar. July 10, 2019. Available online: <https://vimeo.com/347381832>
11. **Clouston P**. 2018. "A New Era for Wood Building Construction: Benefits for the Environment and Research Evaluating the Use of MA Species" Presented to the Franklin Regional Planning Board (FRPB), Greenfield MA, November 1
12. Chung, T. & **Clouston P**. 2018. "UMass Design Building: From Concept to Occupancy" The Maine Mass Timber Event: Seizing the Opportunity. University of Maine, Orono, ME. October 11.
13. Rivard, M. & **Clouston P**. 2018. Lunch and Learn for MA Government Department of Capital Assets Management and Maintenance (DCAMM). Boston, MA. October 5
14. **Clouston P**. 2018. "A New Era for Wood Building Construction: Benefits for the Environment and Research Evaluating the Use of MA Species" Presented to the Mohawk Trail Woodlands Partnership Advisory Committee, Charlemont, MA, July 17
15. Chung, T. & **Clouston P**. 2018. "UMass Design Building: A Firsthand Account from Design through Owner Occupancy" WoodWorks Webinar (988 participants) URL: <http://www.woodworks.org/education/online-seminars/> May 9
16. **Clouston P**. 2018. "From Innovation to Implementation: Emerging Bio-Based Building Technologies from UMass Amherst". Faculty Visit/Seminar. Oregon State University. February 21, 22
17. Chung, T. & **Clouston P**. 2017. "UMass Design Building: A Firsthand Account from Design through Owner Occupancy" WoodWorks Northeast Mass Timber Symposium in NYC, NY. November 16
18. **Clouston P**, 2017. Midcoast Conservancy "A Day in the Woods". Jefferson ME. October 14
19. **Clouston P**, 2017. "High-Tech Timber", Mass. Forest Alliance Annual Meeting. Westborough, MA. June 3
20. **Clouston P**, 2017. "Timber-Concrete Composite Floor Technology: Research Design and Implementation", Two 1 hour sessions. WoodWorks Wood Solution Fair, Seattle, WA. April 25
21. **Clouston P**, 2017. "Why Wood? High-Tech Timber in the Design Building", Harvard Forest Seminar. Broadcasted on-line. UMass, Amherst, MA. April 14
22. **Clouston P**, 2017. "High-Tech Timber", Guest Lecture. Architecture Department, MIT, Cambridge, MA. March 13
23. J. Dubois, **Clouston P**, Kim Y. 2016. "Combatting Climate Change with Timber Construction", New England Sustainable Energy Association (NESEA), Building Energy Boston, MA, March 8-10

24. **Clouston P**, Brungraber B., Kim Y. 2016. "Combatting Climate Change with Timber Construction", SCUP 2016 North Atlantic Regional Conference, The New School | New York, NY, March 22
25. **Clouston P**, Schreyer A. 2016. "The UMass Design Building: A Firsthand Guide to Designing and Constructing Mass Timber Structures" WM|AIA Monthly Programs, UMass, Amherst, MA. April 2. URL: <http://www.wmaia.org/continuinged.html>
26. Marc Rivard, Tom Chung, **Clouston P**, Schreyer A. 2016. "Big Buzz on Tall Wood in Massachusetts", WoodWorks, URL: <http://www.woodworks.org/wpcontent/uploads/CLOUSTON-SCHREYERUMass-Design-Building-160517.pdf>
27. **Clouston P**, 2016. "Wood in Construction: a Global Perspective", New England Forestry Foundation Annual Meeting. Littleton MA. June 4
28. **Clouston P**, Dubois J., Kim Y. 2015. "Combatting Climate Change with Timber Construction", SCUP 2015 North Atlantic Regional Conference, Rhode Island School of Design, Providence, RI, April 13
29. **Clouston P**. 2015. "UMass Design Building: High-Tech Timber" Smith College Engineering Forum, Northampton, MA, Nov 12
30. **Clouston P**. 2015. "Women in Design Keynote Breakfast: Research. Innovate. Design." Panel Member. Architecture Boston Expo (ABX) 2015, Boston Convention and Exhibition Center, Nov 17
31. **Clouston P**. 2014. "Emerging Technologies with Wood and Bio-based Building Products" American Institute of Architects (AIA) KnowledgeNet Webinar, May 29
32. **Clouston P**. 2014. "Using Wood in Constructing Today's Sustainable Buildings" Forest Forum XXI, Harvard Forest, Petersham, MA, May 7
33. **Clouston P**. 2012. "Sustainable Building Materials: Emerging Technologies." Wood in the 21st Century: Design and Preservation of Contemporary & Historic Architecture" Massachusetts Institute of Technology (MIT), Cambridge, MA
34. **Clouston P**. 2011. "Wood: A New Direction in Science and Engineering." Daughters of Invention Lecture Series, Smith College, Northampton, MA
35. **Clouston P**. 2011. "Innovative & Sustainable Building Materials" Department of Environmental Conservation Seminar Series, UMass, Amherst, MA
36. **Clouston P**. 2009. "Structural Wood Composite Research and Green Building" Civil and Environmental Structures Seminar, UMass, Amherst, MA
37. **Clouston P**. 2009. "How UMass Leads the Way: Preparing Students for Careers in the Green Economy." Women of UMass Event, Framingham, MA
38. **Clouston P**. 2006. "Characterization and Strength Modeling of Parallel Strand Lumber." Given at the 7th World Congress on Computational Mechanics. Los Angeles, California

39. **Clouston P.** 2003. "A Stochastic Plasticity Approach to Strength Modeling of Wood Composites". 37th International Wood Composite Materials Symposium and Technical Workshop, Pullman, Washington, USA
40. **Clouston P.** 2003. "Application of a New Wood-Concrete Concrete Composite System", given at the Boston Society of Civil Engineers' (BSCE) Structural Meeting
41. **Clouston P.** 2002. "Engineered Wood Products - Detailing", given at the Home Builder's Association (HBA) meeting, Amherst, MA
42. **Clouston P.** 2002. "Demystifying Engineered Wood Products", given at the annual North America Remodeler's Institute meeting, Holyoke, MA

Service and Outreach

Professional Society / Council Memberships

- Boston Society of Civil Engineers Since 2002
- American Society of Civil Engineers Since 2001
- Canadian Society for Civil Engineering 2000-2009
- Forest Products Society 1998-2013
- Association of Professional Engineers and Geoscientists of B.C. Since 1990

Professional and Administrative Positions

- *Co-Organizer* Building Technology Educators Society 2019 Conference. UMass, Amherst, MA 2018-2019
- *Co-Organizer* mini-symposium on Wood Mechanics. Engineering Mechanics Institute 2018 Conference at MIT, Cambridge, MA 2018
- *Ad-hoc Reviewer.* National Science Foundation (NSF) grant. ENG/IIP Program, CMMI – Structural and Architectural Engineering Panel. 2017
- *International Board Member and Co-Organizer* mini-symposium on Wood Engineering Education Initiatives. 2016 World Conference on Timber Engineering (WCTE 2016), Vienna, Austria 2016
- *Ad-hoc Reviewer.* National Science Foundation (NSF) grant. ENG/IIP Program, CMMI – Structural and Architectural Engineering Panel. (Natural Hazards Engineering Research Infrastructure Division) FY 2016
- *Panel Member.* National Science Foundation (NSF) grant. ENG/IIP Program, PFI: AIR – Civil and Environmental Systems Panel FY 2015
- *Session Chair.* "Structural Composite Systems Track" 2014 World Conference on Timber Engineering (WCTE 2014), Quebec, CA 2014
- *Department Personnel Committee Member* 2012, 2013, 2014, 2018
- *Associate Editor.* American Society of Civil Engineering (ASCE), Journal of Materials in Civil Engineering (JMCE) Since 2013
- *Ad-hoc Reviewer.* Leaders Opportunity Fund | Canada Foundation for Innovation Program FY 2012
- *Panel Member.* USDA, National Institute of Food and Agriculture (NIFA), Institute of Bioenergy, Climate and Environment (IBCE), Forestry Products Research Panel FY 2012

- *Panel Member.* National Science Foundation (NSF) grant. Division of Civil Mechanical and Manufacturing Innovation (CMMI), Structural Materials and Mechanics (SMM). FY 2011
- *Graduate Concentration Coordinator (GCC)* of Building Systems Concentration, Department of Environmental Conservation Since 2010
- *Panel Member.* National Science Foundation (NSF) – Faculty Early Career Development (CAREER) Grant. Division of Civil Mechanical and Manufacturing Innovation, Structural Materials and Mechanics. FY 2008
- *Founder and Coordinator.* Professional Masters degree Option in Green Building, University of Massachusetts 2007-2010
- *Committee Member.* American Society of Civil Engineers (ASCE) Wood Education Committee Since 2007
- *Symposium Organizer and Moderator.* Wood Structures Symposium, University of Massachusetts 2007, 2008 & 2011
- *Panel Member.* United States Department of Agriculture (USDA) Small Business Innovation Research (SBIR) Competitive Grant Program FY 2006
- *Northeast Representative.* National Planning Committee for the National Association of Professional Forestry Schools and Colleges (NAPFSC-NPC) 2003-2006
- *Membership Chair / Section Correspondent.* Forest Products Society, Northeast Region Since 2005
- *Chair.* Forest Products Society, Northeast Region 2003-2005
- *Panel Member.* United States Department of Agriculture (USDA) National Research Initiative (NRI) Competitive Grant Program for Improved Utilization of Wood Fiber FY 2004
- *Senator.* Faculty Senate Council and Senate Committee on Committees, University of Massachusetts 2001-2004
- *Vice-Chair and Program Chair.* Forest Products Society, Northeast Region 2002-2003
- *International Conference Organizer and Moderator.* Forest Products Society Northeast Region Annual Conference, “Innovations in Wood Construction” May, 2003
- *Steering Committee Member.* Architecture + Design Program, University of Massachusetts 2002 - 2006
- *Adhoc Reviewer* Varies since 2001
 - ASCE: Journal of Civil Engineering and Management
 - ASCE: Journal of Engineering Mechanics
 - ASCE: Journal of Materials in Civil Engineering
 - ASCE: Journal of Structural Engineering
 - ASTM: Journal of Testing and Evaluation
 - BioResources Journal: North Carolina State University
 - CGPublishing: International Journal of the Constructed Environment
 - The Canada Foundation for Innovation (CFI) Leaders Opportunity Fund
 - Elsevier: Construction and Building Materials
 - Elsevier: Composites Part B: Engineering
 - Elsevier: Composites Science and Technology
 - Forest Products Journal
 - IBPSA Journal of Building Performance Simulation
 - International Journal of Adhesion and Adhesives
 - Journal of Green Building

- John Wiley and Sons Book Publishers
- National Science Foundation (NSF) CMMI – Hazard Mitigation and Structural Engineering Program
- National Science Foundation (NSF) Industry & University Cooperative Research (I/UCRC) Program National Science and Engineering Research Council of Canada (NSERC) Discovery Grants Program
- Open Access Journals: Journal of Civil Engineering and Construction Technology
- Routledge: International Journal of Construction Education and Research
- SAGE Open Manuscript
- Springer: Journal of Wood Science
- Springer: European Journal of Wood and Wood Products
- Taylor and Francis: Wood Material Science and Engineering
- USDA-CSREES (NRI) Competitive Grants Program - Biobased Products and Bioenergy Production Research (71.2)
- USDA Small Business Innovation Research (SBIR) Competitive Grant Program
- *Co-organizer and Facilitator.* Full day post-conference tour for World Conference on Timber Engineering (WCTE) Vancouver, BC July 2000
- *Researcher* at the Laboratoire de Mécanique et Technologie (LMT), École Normale Supérieure, Cachan - University Paris, France 1998–1999
- *Participant.* ASCE Wood Engineering in the 21st century: Research Needs and Goals Wood Workshop, Portland Oregon April 1997

Awards and Recognition

1. Featured in the Boston based TV show The Chronicle. 2021
<https://www.wcvb.com/article/can-a-building-made-of-wood-fight-climate-change/36970296> and on YouTube
<https://www.youtube.com/c/Chronicle5WCVB/videos>. -
2. Featured in UMass News Office article for groundbreaking research. Article was picked up by 7 other news outlets. 2020
3. Research and lab featured in article in the Washington Post: 2019
<https://www.washingtonpost.com/climate-solutions/2019/12/12/forget-log-cabin-wood-buildings-are-climbing-skyward-with-pluses-planet/>
4. Co-featured in 2-part podcast on the Mass Construction Show. Mass Timber Part 1.<https://goo.gl/uC58xP>: Mass Timber Part 2. 2019
<https://goo.gl/ND5uUn>
5. Co-featured in UMass Magazine cover story “Mass Timber” 2017
 URL: <http://www.umass.edu/magazine/summer-2017/mass-timber>
6. Featured in 2nd Suffolk Construction blog video. URL: 2017
<https://www.youtube.com/watch?v=ggu6NjwNkSk&feature=youtu.be>
7. Featured in UMass Research Next article “Teaching Structure” 2017
 URL: <http://www.umass.edu/researchnext/feature/teaching-structure> 2016

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| 8. | Featured in Suffolk Construction blog video. URL:
http://thesuffolkblog.com/2016/02/23/watch-high-tech-timber-erected-at-umass/ | 2016 |
| 9. | Co-starred in the UMass News Office video "Design Building Progress".
URL: http://www.umass.edu/gateway/in-video/research | 2016 |
| 10. | College of Natural Science CAFÉ spotlight story:
http://ag.umass.edu/news-events/highlights/we-can-turn-climate-change-around | 2016 |
| 11. | Research Leadership in Action Award, University of Massachusetts.
\$17,000 | 2007 |
| 12. | Lilly Fellowship, Center for Teaching, University of Massachusetts | 2005-2006 |
| 13. | College of Food and Natural Resources Instructional Development. \$1000 | 2002 |
| 14. | Weyerhaeuser Fellowship in Wood Design. \$30,000 | 1998-2000 |
| 15. | VanDusen Graduate Fellowship in Forestry. \$3,000 | 1997 |
| 16. | Forintek Fellowship in Wood Science and Wood Products, \$30,000 | 1995-1997 |
| 17. | ENCON Endowment National Scholarship, \$5,000 | 1995 |
| 18. | Weyerhaeuser Fellowship in Wood Design, \$15,000 | 1994 |