Expert Search

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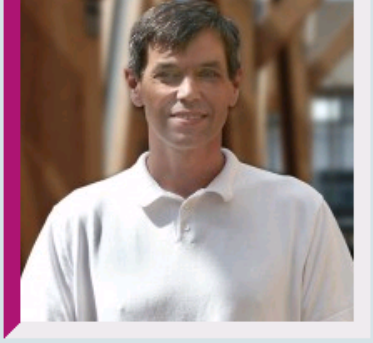
Research Keywords

international trade **biodiversity** entomology hydrology forest biology simulation communities and livelihoods **wood products** **modelling** forest measurements **sustainability** wood science **biotechnology** stream and riparian research social science **conservation** landscape ecology soil science population demography vertebrate ecology forest operations ornithology communications economics silviculture forest policy sampling design **genetics** **ecosystems** **genomics** wood durability wood technology business management **ecology** landscape planning **aboriginal forestry** remote sensing engineering wood anatomy **forest management** microbiology **climate change** biometrics stand dynamics wood physics and drying



Gregory D Smith

Associate Professor

Research Interests: engineering, wood products

Contact Info
Teaching and Research
Publications

Department of Wood Science

Forest Sciences Centre 2935
2424 Main Mall
Vancouver, BC V6T 1Z4
Canada

work phone: 604-822-0081

greg.smith@ubc.ca

Advancing fundamental understanding of bonding processes in advanced wood composites. – Quantification of the processing-structure-property relationships of reconstituted wood composites. – Application of fracture mechanics to the bonding of wood composites. – Developing realistic, mechanism based models that describe blending processes for OSB and MDF. – Development of new classes of advanced composite wood products.

Projects

Development of Bamboo Composites for structural lumber applications. Examination of the proerties and resin contents of commerical MDF and PB

Modelling the rotary drum blending process in the manufacuring of OSB and OSL using discrete element modelling

Professional Affiliations

Forest Products Society FPS
Professional Engineer P.Eng.
Society of Wood Science and Technology

Current Graduate Students

Shayesteh Haghdan, PhD
Solace Sam-Brew, PhD
Ying-Li (Ingrid) Tsai, PhD
Diyan Xian, MASc
Jörn Dettmer, MASc

Current Courses

Winter 2013
WOOD244 Quantitative Methods in the Wood Industry Sections

Solving practical problems in the wood industry using computer-based mathematical tools including spreadsheets, visual basic programming and relational database systems.

Winter 2013
WOOD341 Problem Solving Sections

Practical computer and problem solving skills; problem cases taken from industrial applications.

Winter 2013
WOOD487 Glued Wood Products Sections

Physical, chemical and mechanical variables involved in cold, hot and non-conventional adhesive bonding of wood; preparation and characteristics of adhesives; plywood, composite wood panels, hardboard, medium density fibreboard and laminated wood manufacturing processes; important physical and chemical properties of products; methods of prefinishing.

Selected Publications

Semple, K.E. Xian, D. Smith, G.D. (2013). **Reinforced-core particleboard for improved fastener holding ability.** Wood and Fiber Sience 02May2013 Wood and Fiber Science 02May2013.

Chen, Z. Yan, N. Smith, G. D. Deng, J. (2012). **Investigation of Flexural Creep of Kraft Paper Honeycomb Core Sandwich Panels Using the Finite Element Method (FEA)** Wood and Fiber Science 44(4)1-10 Wood and Fiber Science 44(4)1-10

E.K. Sackey, C. Zhang, Y.-L Tsai, A. Prats, G.D. Smith (2011). **Feasibility of a New Hybrid Wood Composite Comprised of Wood Particles and Strands** Wood and Fiber Science 43(1) 1-10 Wood and Fiber Science 43(1) 1-10

Z. Chen, N. Yan, J. Deng, G.D. Smith. (2011). **Flexural creep behavior of sandwich panels containing Kraft paper honeycomb core and wood composite skins** Materials Science and Engineering: A Volume 528, Issues 16-17, 25 June 2011, Pages 5621-5626. Materials Science and Engineering: A Volume 528, Issues 16-17, 25 June 2011, Pages 5621-5626.

Zhou, C.; C. Dai; G.D. Smith. (2011). **Modeling vertical density profile formation for strand-based wood composites during hot pressing: Part 2. Experimental investigations and model validation** Composites Part B: Engineering 42(6)1357–1365 Composites Part B: Engineering 42(6)1357–1365

Sam-Brew, S.; Semple K. ; Smith, G.D. (2011). **Preliminary experiments on the manufacture of hollow core composite panels** Forest Products Journal 61(5)381 FPJ manuscript FPJ-D-10-00068. Forest Products Journal 61(5) 381 FPJ manuscript FPJ-D-10-00068.

Sam-Brew, S. K. Semple G.D. Smith (2010). **Edge Reinforcement of Honeycomb Sandwich Panels** Forest Products Journal 60(4): 382-389. Forest Products Journal 60(4): 382-389.

C. Zhang and G.D. Smith (2010). **Effects of Nanoclay addition to Phenol-Formaldehyde Resin on the Permeability of Oriented Strand Lumber** – Wood and Fiber Science, 42(4), 2010, pp. 553-555

Sackey, E.K. and G.D. Smith (2010). **Characterizing macro-voids of uncompressed mats and finished particleboard panels using response surface methodology and X-ray CT** Walter de Gruyter Holzforschng, Vol 64, pp. 343-352, 2010. DOI 10.1515/HF.2010.052

Zhang, C. Smith, G.D. (2010). **In-Plane Permeability of Oriented Strand Lumber. Part II: Microscopic Investigation of Void Structure During Compression** Society of Wood Science and Technology Wood and Fiber Science 42(2) pp. 121-129

Zhang C Smith GD (2010). **In-Plane Permeability of Oriented Strand Lumber, Part I: The Effects of Mat Density and Flow Direction** -Society of Wood Science and Technology -Wood and Fiber Science 42(1)99-106

Fang, Z. Ruddick, J.N.R. Smith, G.D. (2009). **Selected Wood Preservatives for use with OSB. Part 2: Mechanical Properties of Boards.** – JIWS 18(2)75-81

Cheng Zhou Gregory D. Smith Chunping Dai (2009). **Characterizing hydro-thermal compression behavior of aspen wood strands** -Walter de Gruyter -Holzforschung 63(5):609–617.

Sackey, E., G.D. Smith (2009). **Empirical Distribution Models for Slenderness and Aspect Ratios if Core Particles of Particulate Wood Composites.** – Wood and Fiber Science 41(3)255- 266.

Sackey, E., G.D. Smith. (2009). **Empirical Distribution Models for Slenderness and Aspect Ratios if Core Particles of Particulate Wood Composites** – Wood and Fiber Science 41(3)255- 266

Zhou, C., Dai, C., Smith, G.D. (2008). **A generalized mat consolidation model for wood composites** – Holzforschung, 62(2) pp. 201-208.

A. Oudjehane J. Wang C. Zhang G.D. Smith F. Lam (2008). **Development of thick strand-based mountain pine beetle wood composites: Duration of load and permeability analyses** – -BC Journal of Ecosytems and Management , 9(3) 2008, 178-180.

Sackey, E.K., Semple, K.E., Oh, S.-W., Smith, G.D. (2008). **Improving Core Bond Strength of Particleboard through Particle Size Redistribution.** Society of Wood Science and Technology Wood and Fiber Science 40 (2):214-224

Semple, K. E., Vaillant, M.-H., Kang, K.-Y., Oh, S. W., Smith, G. D., Mansfield, S. D. (2007). **Evaluating the suitability of hybrid poplar clones for the manufacture of oriented strand boards.** – Holzforschung, 61(4):430-438

Fang, Z, J.R. Ruddick and G. Smith (2006). **Use of a formulated wood preservative (K-HDO and fenpropimorph) to enhance the durability of PF resin bonded waferboard.** – JIWS 17(4)216-222

Fang, Z., J.N.R. Ruddick and G.D. Smith (2006). **Evaluating wood preservatives fror use with OSB, Part 1: Compatibility with typical resin systems.** – Journal of the Institute of Wood Science 17(4)216-222

H.J. Park, K. Semple, and G.D. (2006). **Screw thread shape and fastener type effects on load capacities of screw-based particlebaord joints in case construction** – Forest Products Journal, 56(4):48-55

Fakhri, H.R., K. Semple, and G.D. Smith. (2006). **Permeability of OSB. Part I. The effects of core fines content and mat density on transverse permeability** – Wood and Fiber Science 38 (3): 450-462 JUL 2006

Fakhri, H.R. and G.D. Smith (2006). **Transverse Permeability of OSB. Part II. Modeling the effects of density and core fines content** – Wood and Fiber Science 38(3), pp. 463-473

Semple, K., E. Sackey, H. Fakhri, T. McConchie, and G.D. Smith (2006). **Effect of Extended Mat Open Assembly Time on Properties of OSB Bonded with pMDI** – Wood and Fiber Science 38(3) pp. 546-552

Semple, K. and G.D. Smith (2005). **Prediction of Internal Bond Strength in Particleboard from Screw Withdrawl Resistance Models** – Wood and Fiber Science 38(2) pp. 256-267

Smith, GD (2005). **The lap-shear strength of bonds between Oriented Strand Board (OSB) like strands coated with pMDI resin** – Holz als Roh- und Werkstoff 53(4):311-12

Smith, G.D. (2005). **Direct Observation of the Tumbling of OSB Strands in an Industrial Scale Coil Blender** – Wood and Fiber Science 37(1):147–159

Semple, K., E. Sackey, H.J. Park, and G.D. Smith (2005). **Properties variation study of furniture grade M2 particleboard manufactured in Canada** – Forest Products Journal, 55(12):117-125

Semple, K., E. Sackey, H.J. Park, and G.D. Smith. (2005). **Properties comparison of furniture grade MS and M2 particleboard products manufactured in Canada.** – Forest Products Journal 55(12):125–131.

Smith, G.D. (2004). **A laboratory technique for coating strands with resin droplets of controlled size and spacing** – Forest Products Journal 53(7/8):70-76.

Conrad, M.P.C., G. Fernlund, and G.D. Smith (2004). **Fracture Toughness of Wood-Adhesive Bonds** – Proceedings of the Fourth Canadian-International Composites Conference, Ottawa, Ont. August 19-22, 2003. pp. 11.

Conrad, M.P.C., G.D. Smith, G. Fernlund (2004). **Fracture of wood composites and wood-adhesive joints: A comparative review** – Wood and Fiber Science 36(1) 2004 pp.26-39

Smith, G.D. (2004). **The effect of some process variables on the lap-shear strength of aspen strands uniformly coated with pMDI-resin** – Wood and Fiber Science 36(2) 2004, pp. 228–238.

Conrad, M.P.C., G.D. Smith, G. Fernlund (2003). **Fracture of solid wood: A review of structure and properties at different length scales** – Wood and Fiber Science 35(4), 2003, pp. 570-584

Conrad, M.P.C., G.D. Smith, G. Fernlund (2003). **Fracture of discontinuos wood-adhesive bonds** – International Journal of Adhesion and Adhesives, 23 (2003) 39-47

Smith, G.D. (2003). **The lap-shear strength of droplets arrays of a PF-resin on OSB strands** – Forest Products Journal 53 (11/12) 2003: 1-7

Plummer. C.J.G, P.-E. Bourban, J.-E. Zanetto, G.D. Smith, J.-A. E. Manson (2003). **Nonisothermal Fusions Bonding in Semicrystalline Thermoplastics** – Journal of Applied Polymer Science, 87:1267-1276

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Smith, G.D. and A. Poursartip (1993). **A comparison of two resin flow models for laminate processing** – Journal of Composite Materials 27: 1696–1711.

Faculty of Forestry
2424 Main Mall
Vancouver, BC Canada V6T 1Z4
Website www.forestry.ubc.ca
Email forestry.web@ubc.ca

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