

Curriculum Vitae

Sally Krigstin
Assistant Professor

A. Date Curriculum Vitae is Prepared: [2019 04]

B. Biographical Information

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1. EDUCATION

Degrees

Sept 2004-Sept. 2008 Ph.D., Biomaterials, Forestry/Forest Biomaterial Sciences, University of Toronto, Toronto, Ontario, Canada, Supervisor: M. Sain
Jan 1983-Sept 1986 M.Sc.F., Wood Chemistry and Forest Products, University of Toronto, Toronto, Ontario, Canada. Supervisor: D.N. Roy
Sept. 1978-May 1982 B.Sc.F. Wood Sciences/Forestry. University of Toronto, Toronto, Ontario, Canada. Supervisor: D.N. Roy

2. EMPLOYMENT

Current Appointments

2016 - Current Assistant Professor, Faculty of Forestry, University of Toronto. **(70% CLTA Appointment)**
Teaching and research in the area of Bioenergy, Innovative Biomaterials, Utilization of Industrial Waste
2012- Current Master in Forest Conservation Program Coordinator, Faculty of Forestry, University of Toronto.
2013-2015 Research Associate and Assistant Professor, Advancement of value-added and high value forest Biofuels in Ontario. OMNR
2008-2012 Program Coordinator and Assistant Professor for the Biomaterial Sciences Program, Advancement of the Biomaterials & Bioenergy Industry in Ontario. OMNDMF.

Previous Appointments

1993-95,& 1997-2004 Quality Assurance and Development Manager, Atlantic Newsprint & Tissue Mills, Whitby, ON, Canada.
1995-1997 Pulp & Paper Marketing Specialist, Honeywell Industrial Automation and Control, Toronto, ON, Canada.
1991-1993 Shift Technical Assistant, Quebec and Ontario Paper, Thorold, ON, Canada
1987-1991 Project Engineer (International), Valmet Automation, Concord, ON, Canada
1986-1987 Development Chemist & Process Engineer, Rolland Paper Inc., Scarborough, ON, Canada

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UNIVERSITY

2006-2007

Course Coordinator, Pulp and Paper Processes, Faculty of Applied Science and Engineering, University of Toronto, Toronto, ON, Canada.

1985-1986

Lecturer, Faculty of Forestry, University of Toronto, Toronto, ON, Canada.

1983-1986

Teaching Assistant and Organic Chemistry Laboratory Demonstrator, Faculty of Forestry, University of Toronto, Toronto, ON, Canada.

COLLEGE – LECTURER

2006-2007

Lecturer, Inorganic Chemistry, General Arts & Science, School of Integrated Studies, Durham College, Whitby, ON, Canada

3. HONOURS AND CAREER AWARDS

Distinctions and Research Awards

LOCAL

Received

2007-2009

Heffernan Innovation Fellowship, PI, Faculty of Applied Science and Engineering, University of Toronto, Toronto, ON, Canada. Innovation in Research Award

Total Amount: \$80,000 over 2 years.

2005

Best Paper of the Conference Award. 12th Annual graduate research conference, Applied Chemistry and Chemical Engineering, Faculty of Applied Science and Engineering, University of Toronto, Toronto, ON, Canada.

1981 & 1982

Osmose-Pentox Scholarship, Faculty of Forestry, University of Toronto, Toronto, ON, Canada.

NATIONAL

Received

1982

Forest Products Research Society Eastern Canada Section Wood Award. Faculty of Forestry, University of Toronto, Toronto, ON, Canada.

LOCAL

Student/Trainee Awards

Received

2005-2006

Government on Ontario/Alpa Lumber Inc. Graduate Scholarship in Science and Technology. Ph.D. Studies. Awardee Name: Sally Krigstin. University of Toronto, Toronto, ON, Canada.

2003-2005

Natural Science and Engineering Research Council (NSERC), PGSB. Ph.D. Studies. Awardee Name: Sally Krigstin University of Toronto, Toronto, ON, Canada.

1985

Ontario Graduate Scholarship. M.Sc.F. Studies. Awardee Name: Sally Krigstin. University of Toronto, Toronto, ON, Canada.

1983-1984

Natural Science and Engineering Research Council (NSERC), Special Postgraduate Scholarship. M.Sc.F. Studies. Awardee Name: Sally Krigstin. University of Toronto, Toronto, ON, Canada.

1981 & 1982

Natural Science and Engineering Research Council (NSERC), Summer Research Award. Awardee Name: Sally Krigstin. University of Toronto, Toronto, ON, Canada.

4. PROFESSIONAL AFFILIATIONS AND ACTIVITIES

Professional Associations

2013-present **Board member**, Canadian Institute of Forestry, Southern Ontario Section
2011-present **Treasurer and Trustee**, Forest Products Society, Eastern Canadian Section
Administrative

Activities

INTERNATIONAL

2011- present **Secretary**, International Energy Agency Bioenergy Task 43

PROVINCIAL / REGIONAL

Sept. 2017-Current **Member**, Environmental Advisory Board, Township of Georgina, Ontario, Canada

LOCAL

January 2018 – Current **Member**, Academic Board, University of Toronto, Toronto, Ontario, Canada

August 2017 **Chair** – Ph.D. Qualifying Exam. S. Mustari.

February 2018 **Candidate evaluator** for Clean Energy Chemistry Search Department Chemical Engineering.

2009 –Current **Executive member**, Faculty of Forestry Alumni Association, University of Toronto, Toronto, Ontario, Canada.

2009-2016 & 2018 -current **Co-Chair** Health and Safety Committee, Faculty of Forestry, University of Toronto, Toronto, ON, Canada

2004 & 2009 **Member**, Dean's Selection Committee, Faculty of Forestry, University of Toronto, Toronto, ON, Canada.

2001-2003 **Member** Advisory Committee, Paper Recycling and Processing Technologists Program, Durham College, Oshawa, ON, Canada

Peer Review Activities

GRANT REVIEWS

JULY 2016 NSERC COLLABORATIVE RESEARCH AND DEVELOPMENT GRANT - MULTIVARIATE MEASURES OF IN-PROCESS WOOD PULP COMPOSITION AND MORPHOLOGY: SMART SENSORS FOR REAL-TIME PROCESS CONTROL AND FIBRE PRODUCT OPTIMIZATION

NOV 2016 NSERC DISCOVERY GRANT - DEVELOPMENT OF NANOFIBER REINFORCED BIOPLASTIC COMPOSITE FOAMS

MANUSCRIPT REVIEWS

APRIL 2019 **AGRIENGINEERING** - INFLUENCE OF STORAGE MOISTURE AND TEMPERATURE ON LIGNOCELLULOSIC DEGRADATION

MAY 2018 **FUEL** – DETERMINATION OF OFF-GASSING AND SELF-HEATING POTENTIAL OF PELLETS-2 METHOD COMPARISON AND CORRELATION ANALYSIS

MAY 2018 **FORESTS**-ANALYSIS OF SELECTED PHYSICAL PROPERTIES OF CONIFER CONES WITH RELEVANCE TO ENERGY PRODUCTION AND TRANSPORTATION.

MAR 2018 **FORESTS**-CLUSTERING OF TYPE OF RESIDUES FROM FOREST HARVESTING OPERATIONS ON THE BASIS OF CHEMICAL CHARACTERISTICS TO ENERGY PURPOSES

FEB 2018 **FORESTS**- OPTIMIZING BIOMASS FEEDSTOCK LOGISTICS FOR FOREST RESIDUE PROCESSING AND TRANSPORTATION USING MIXED INTEGER PROGRAMMING COUPLED WITH A SHORTEST PATH ALGORITHM

2017 **INDUSTRIAL CROPS AND PRODUCTS**- METHANE AND HYDROGEN PRODUCTION FROM

ANAEROBIC DIGESTION OF SOLUBLE FRACTION OBTAINED BY SUGARCANE BAGASSE OZONATION

2017 **FOREST PRODUCTS JOURNAL** - ONSITE ENERGY CONSUMPTION AND SELECTED EMISSIONS AT SOFTWOOD SAWMILLS IN THE SOUTHWESTERN UNITED STATES

2010 **THE FORESTRY CHRONICLE** - FUEL QUALITY OF FIRE BURNT TREES FOR BIOENERGY PRODUCTION: A CASE STUDY OF FOUR TREE SPECIES FROM NORTHWESTERN ONTARIO

C. Academic Profile

1. RESEARCH STATEMENTS

1. Characterization and value-added applications for papermill waste. This research has laid the scientific basis for use of pulp and paper mill waste in novel value-added applications. The research was carried out for a period of 4 years and contributed to the dissertation requirement for the degree of Doctor of Philosophy. The research addresses re-use of papermill in a number of applications including biocomposites, paper and feedstock for bio-chemical manufacture. A novel process technology has been invented for incorporating this material into composite materials.
2. Development of Biobased (Lignin) Binder for Industrial Products. Canadian Patent submitted. The innovation in binder technology has found application in water-resistant horticultural biodegradable products to replace plastic pots. Material is certified under the USDA Biobased preferred labeling and Health Canada for produce packaging.
3. Development of a 100% woody biomass based coating that provides grease and water resistance. Canadian Patent – 2,923,675, US Patent – 14/555,354.
4. Development of a Canadian sawmill database and model for predicting and quantifying wood residue availability. This information will be used in the update of the Bimat model currently available from NRCan.
5. Characterization of forest harvest residue for their biorefining potential and GHG emissions. Collaborating with NRCan and FPAC biopathways initiative.
6. Modeling of green house gas emissions and temperature evolution from stored woody biomass and their contribution to supply chain feasibility for bioenergy in Canada.

D. Research Funding

1. GRANTS, CONTRACTS AND CLINICAL TRIALS

PEER-REVIEWED GRANTS

FUNDED

- 2019-2022 **Co-Investigator.** Optimization of new hydrophobic pulp on conventional pulp-moulding machines. Mitacs Accelerate. Total project:\$165,000.
- 2018-2019 **Grant Coordinator.** Development of a decision support tool for optimizing quality changes in a “living” biomass pile. Forest Innovation Program, Natural Resources Canada, Contribution Agreement. Principle Investigator: M.Sain. Collaborators: FPInnovations, Pineland Nursery, PAMI. Contribution: \$36,225. Total Project: approx.\$60,000.
- 2016-2018 **Lead.** Biobinder Demonstration Plant, Investment in Forest Industry Transformation (IFIT). Canadian Federal Government. Natural Resources Canada. Principal Investigator: Krigstin, Sally. Collaborators: M.Sain, University of Toronto, MSIPME, Pulp Moulded Products. Total Project \$370,000.
- 2017-2018 **Grant Coordinator.** New generation biomass feedstocks for Biorefineries: Optimizing the

value of woody biomass for energy, materials and chemicals through supply chain management techniques. Forest Innovation Program, Natural Resources Canada, Contribution Agreement. Principle Investigator: M.Sain. Collaborators: FPInnovations, Pineland Nursery. Contribution: \$34,500.

- 2015-2016 **Lead Researcher.** Economic model for supply and demand of sawmill residues as affected by new wood pellet market – A regional case study. Forest Innovation Program, Natural Resources Canada, Contribution Agreement. Principle Investigator: M. Sain. Contribution: \$65,000.
- 2014-2015 **Lead Researcher.** Detailing the forest biomass resource for industry advancement. Forest Innovation Program, Natural Resources Canada, Contribution Agreement. Principle Investigator: S. Kant. Collaborators: OMNR. Contribution: \$45,000.
- 2014 **Principle Investigator.** OCE VIP-Development of plantable containers using bio-based fibre material. \$30,000.
- 2013-2014 **Principle Investigator.** Potentially limiting characteristics of Canadian forest species for the solid fuel biomass market. Forest Innovation Program, Natural Resources Canada, Contribution Agreement. Collaborators: Haliburton Sawmill. Contribution: \$30,000
- 2012-2013 **Principle Investigator.** Classification of Sawmill Residues for Best End-Use and Value maximization. Forest Innovation Program, Natural Resources Canada, Contribution Agreement. Collaborators: Haliburton Sawmill. Contribution: \$20,000
- 2012 **Principle Investigator.** Ontario Centres of Excellence, Technical Problem Solving Grant, with industry collaborator: \$8,000.
- 2011-2012 **Principle Investigator.** Algoma Biofibre Initiative. Forest Innovation Program, Natural Resources Canada, Contribution Agreement. Collaborators: Algoma. Contribution: \$28,000.
- 2011-2012 Ontario Wood Promotions Program Capital Grant, Ministry of Northern Affairs Mines and Forestry: \$50,000.
- 2011 NRCan, Forest Innovation Program, Value to Wood Program: \$51,000
- 2010 NSERC Engage grant: Biocomposites, with 2 industry collaborators: \$25,000.
- 2010 NSERC Engage grant: Biocomposites, with 1 industry collaborator: \$25,000.
- 2009 **Lead.** Commercialization of sludge based composites. Ontario Centres of Excellence, Market Readiness, Phase I. Principal Investigator: Krigstin, Sally. Collaborators: M.Sain, Resolute Forest Products, ABSA, Swiss Plas. Total Project \$29,500.

NOT FUNDED

- 2018 **Collaborating scientist.** Mapping Toronto's Old-Growth Trees: A Seed Source for the Future Phase I. Principal Investigator: Davies, E. Toronto Parks and Tree Foundation. Collaborators: S. Smith, Dialog, James Somerville, Toronto Botanical Garden. Total Project \$95,000

NON-PEER-REVIEWED GRANTS

FUNDED

- 2019 Service Contract: Evergreen. Don Valley Ravine Tree Mapping Project. \$15,000
- 2019 Project Learning Tree Canada. Funding for 5 Master in Forest Conservation Student Summer Internships. \$20,000.
- 2019 City of Toronto Grant for Summer Internship. \$5,000.
- 2019 Service Contract: Natural Resources Canada. Comparison of degradation type and rate from woody biomass under 8 and 12 month storage. \$20,125.
- 2018 Service Contract: Natural Resources Canada. Comparison of degradation type and rate from woody biomass materials under long-term storage conditions. \$19,504.
- 2017 Service Contract: Natural Resources Canada. Characterization of industrially stored bark materials for estimation of GHG emissions. \$22,487.
- 2016 Service Contract: Natural Resources Canada. Analysis and characterization of log discs and chip samples from Port Hawkesbury log storage trial. \$22,317.
- 2015 Haliburton Forest Fund: Market assessment of woody residues. \$3,000

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2014	Service Contract: Natural Resources Canada. Physical characterization and thermal characterization of salvaged wood for specific end uses. \$19,540.
2013	Service Contract: Natural Resources Canada. Chlorine content of Canadian Biomass. \$14,600.
2012	Haliburton Forest Fund: Discovering the value of pyrolysis liquid from a conventional pyrolysis unit producing biochar and energy. \$8,700
2010-11	Haliburton Forest Fund: Thermal Treatment of low grade wood: \$10,000/yr for 2 yrs
2009-10	Haliburton Forest Fund: Spalting in low grade wood: \$10,000/yr for 2 yrs.

2. SALARY SUPPORT AND OTHER FUNDING

Trainee Salary Support - Incomplete

2019	Work study position for summer internship on Bioenergy project. Approx. \$3,000
2018	Work study position for summer internship on Bioenergy project. Approx. \$3,000.
2018-current	2 positions NRCan Research Assistant. \$60,000/yr
2017	Work study position for summer internship on Bioenergy project. Approx. \$3,000
2010	Ontario Centres of Excellence Connections. 4 th year research thesis. \$500 per project.
2009	Study on Wood-based biomass availability. Trainee Name: R. Levin. MITAC Accelerate. \$15,000. Toronto, ON, Canada.

E. Publications

1. PEER-REVIEWED PUBLICATIONS

Journal Articles

[Presented in reverse chronological order]

1. **Krigstin, S.**, Helmeste,C, Jia, H., Johnson, K.E., Wetzel, S., Volpe, S., Faizal, W., and F. Ferrero. 2019. Comparative analysis of bark and woodchip biomass piles for enhancing predictability of self-heating. *Fuel* 242:699-709. Impact factor: 4.06. Lead investigator and substantial contribution to conception and design, and analysis and interpretation of data, final approval of manuscript.
2. Caquiat, J. N., Arpino,, G., **Krigstin, S.G.**, Kirk, D.W. and C.Q. Jia. 2018. Dependence of Supercapacitor Performance on Macro-structure of Monolithic Biochar Electrodes. *Biomass and Bioenergy* 118 (Nov): 126-132. Editor: Jon Paul McCalmont. Publisher: Elsevier. *Biomass and Bioenergy*. Impact factor: 3.219. Substantial contribution to conception and design, and analysis and interpretation of data.
3. **Krigstin, S.**, Wetzel,S., Jayabala, N., Helmeste, C., Madrali, S., Agnew, J. and S. Volpe. 2018. Recent health and safety incident trends related to the storage of woody biomass: A need for improved monitoring strategies. *Forests* 9 Impact factor: 1.93. Designed study, analyzed data, final approval of manuscript.
4. Sameni, J., **Krigstin, S.**, Jaffer, S.A. and M.Sain. 2018. Preparation and characterization of biobased microspheres from lignin sources. *Industrial Crops and Products* 115, 58-65. Impact factor: 4.03
5. Wetzel, S., Volpe, S., Damianopoulos,J.and **S. Krigstin**. 2017. Can Biomass Quality Be Preserved through Tarping Comminuted Roadside Biomass Piles? *Forests* 8(9): 12pp. Substantial contribution to designed of study, analysis of data. Final approval of manuscript. Impact factor: 2.08

6. Sameni, J., **Krigstin, S.** and M. Sain. 2017. Solubility of lignin and acetylated lignin in organic solvents. *BioResources* 12(1): 1548-1565. Substantial contribution to conception and design, and analysis and interpretation of data. Final approval of manuscript
7. **Krigstin, S.**, and S. Wetzel 2016. A Review of Mechanisms Responsible for Changes to Stored Woody Biomass Fuels. *Fuel* 175: 75-86. Major author. Impact factor: 4.601
8. **Krigstin, S.**, Wetzel, S., Mabee, W. and S. Stadnyk. 2016. Can Woody Biomass Support a Pellet Industry in Southeastern Ontario: A Case Study. *Forestry Chronicle* 92(02):189-199. Designed study, final approval of manuscript. Impact factor: 0.73
9. Sameni, J., **Krigstin, S.**, and M. Sain. 2016. Characterization of lignins isolated from industrial residues and their beneficial uses. *BioResources* 11(4), 8435-8456. Substantial contribution to conception and design, and analysis and interpretation of data. Final approval of manuscript. Impact factor: 1.334
10. Acquah, GE., Krigstin, S., Wetzel, S., Cooper, P., and D. Cormier. 2016. Heterogeneity of forest harvest residue from Eastern Ontario biomass harvests. *Forest products journal* 66 (3), 164-175. Supervision of concept, design of experiments, analysis and interpretation of data, final edits of manuscript. Impact factor: 0.74
11. Sameni, J., **Krigstin, S.**, and M. Sain. 2015. Effect of preparation parameters on the formation of lignin acetate microspheres. *International Journal of Engineering and Innovative Technology (IJEIT)*4(8): 12pp. Substantial contribution to conception and design. Final approval of manuscript. Impact factor: 2.915
12. Barrette, J., Thiffault, E., Saint-Pierre, F., Wetzel, S., Duchesne, I. and **S. Krigstin**. 2015. Dynamics of dead tree degradation and shelf-life following natural disturbances; can salvaged trees from the boreal forest 'fuel' the forestry and bioenergy sectors? *Forestry* 88(3): 275-290. Substantial contribution to conception and design, and analysis and interpretation of data. Final approval of manuscript. Impact factor: 2.426
13. Parzei, S., **Krigstin, S.**, Hayashi, K., and S. Wetzel. 2014. Forest harvest residues available in Eastern Canada – a critical review of estimations. *Forestry Chronicle* 90(06): 778-784. Substantial contribution to conception and design, and analysis and interpretation of data. Final approval of manuscript. Impact factor: 0.73
14. Khan, S., **Krigstin, S.**, Volpé S. and S. Wetzel 2014. Essential oil composition of forest biomass stored under industrial conditions in Eastern Canada. *Industrial Crops and Products* 56(2014) 35-42. Substantial contribution to conception and design, and analysis and interpretation of data. Final approval of manuscript. Impact factor: 4.03
15. Tudor, D., Robinson, S.C., Sage, T.L., **Krigstin, S.** and P.A. Cooper. 2014. Microscopic investigation on fungal pigment formation and its morphology in wood substrates. *Open Mycology Journal* 8: 174-186. Substantial contribution to concept, design and interpretation of data. Edit of manuscript. Impact factor: 1.67
16. Sameni, J., **Krigstin, S.G.**, Derval dos Santos Rosa, Leao, A. and M. Sain. 2014. Thermal Characteristics of Lignin Residue from Industrial Processes. *Bioresources* 9(1), Feb 2014. Substantial contribution to conception and design, and analysis and interpretation of data. Final approval of manuscript. Impact factor: 1.334
17. **Krigstin, S.G.**, Tchorzewski, J., Hayashi K. and S. Wetzel. 2012. Current Inventory and Modelling of Sawmill Residues in Eastern Canada. Substantial contribution to conception and design, and analysis and interpretation of data. Final approval of manuscript. *Forestry Chronicle* 88(5): 626-635. Impact factor: 0.73
18. Levin, R., **Krigstin, S.** and S. Wetzel. 2011. Biomass Availability in eastern Ontario for Bioenergy and Wood Pellet Initiatives. Substantial contribution to conception and design, and analysis and interpretation of data. Final approval of manuscript. *The Forestry Chronicle* 87(1):33-39. Impact factor: 0.73
19. **Krigstin, S.G.** and Sain, M. 2008. Determination of the mineral constituents of recycled paper mill sludge. *TAPPI Journal*. v 7, n 6, p 9-14. Substantial contribution to conception and design, and analysis and interpretation of data. Final approval of manuscript. Impact factor: 0.65
20. **Krigstin, S.G.** and Sain, M. 2007. The fractionation of dry recycled papermill sludge to higher value components. *Journal of Biobased Materials and Bioenergy*. v 1, n 3, p 315-322. Substantial contribution to conception and design, and analysis and interpretation of data. Final approval of manuscript. Impact factor: 1.54

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21. **Krigstin, S.** and M. Sain. 2006. Characterization and potential utilization of recycled paper mill sludge. Pulp and Paper Canada. v 107, n 5, p 29-32. Substantial contribution to conception and design, and analysis and interpretation of data. Final approval of manuscript. Impact factor: 0.325
22. **Krigstin, S.G.**, K. Wong and D.N. Roy. 1993. The Contribution of the Chemical Components in Juvenile Hybrid Salix spp. To its total energy output. Wood Science and Technology 27:309-320. Impact factor: 1.99

Book Chapters

1. Krigstin, S., Levin, R., and S. Wetzel. 2012. Bioenergy for the urban environment. In: Metropolitan Sustainability, Frank Zeman, editor. Woodhead Publishing Series in Energy, Pages 556-584.

3. NON-PEER-REVIEWED PUBLICATIONS

Journal Articles

- Krigstin, S.G.**, and M. Sain 2005. Recovery and utilization of fibre from recycled papermill sludge. Paper technology 46(7): 37-46 Impact factor: 1.99

4. SUBMITTED PUBLICATIONS

Journal Articles

F. Intellectual Property

1. PATENTS

- August 2017 **Water, Grease and Heat Resistant Bio-based Products and Method of making Same..** Issued. Filing Date: 2015 November. Patent #: 2,923,675, Canada. Joint Holder Name(s): J. Sameni, S. Krigstin, M. Sain.
- May 2016 **Water, Grease and Heat Resistant Bio-based Products and Method of making Same..** Issued. Filing Date: 2014 November. Patent #: US 2016/0145480 A1, United States of America. Joint Holder Name(s): J. Sameni, S. Krigstin, M. Sain.

2. DISCLOSURES

- May 29, 2013 **Hydrophobic nanocellulosic for water resistant coating.** University of Toronto Disclosure reference No: 10002613. Joint Holder Name(s): J. Sameni, S. Krigstin, M. Sain.
- January 2011 **Hydrophobic functionalization of lignocellulosics.** University of Toronto Disclosure reference No: 10002231. Joint Holder Name(s): J. Sameni, S. Krigstin, M. Sain.
- 2008 **Beneficial utilization of sludge residue prepared by a patented drying system.** University of Toronto Disclosure reference No: 10001507. Joint Holder Name(s): S. Krigstin, M. Sain.

G. Presentations and Special Lectures

2. NATIONAL

Invited Lectures and Presentations

Krigstin, S. August 2018. Development of a decision support tool for optimizing biomass quality changes in a "Living" Biomass pile. Recorded Webinar.

Krigstin, S. 2018. Biomass storage workshop – Portage le prairie and pineland. July 2018. Two presentations.

Krigstin, S. 2018. U of T Industry Insight energy industry panel as a speaker on Jan 10, 2018, 6pm – 8pm.

Krigstin, S. 2018. New Generation Biomass Feedstocks for Biorefineries. Canadian Institute of Forestry Webinar Feb. 28, 2018.

Faisal, M. and S. Krigstin. 2017. Modeling biomass piles for pile management. Exploring Advances in Biofuels Conference. 2-4 October 2017. Toronto, Ontario.

Faisal, M. and S. Krigstin. 2017. Modeling biomass piles for pile management. OMNR Bioheat community of practice workshop. 7 March 2017. Toronto, Ontario.

Krigstin, S. 2016. Breaking down certification barriers: Growing the pulp moulded industry into new markets. International Moulded Fiber Association Annual Conference. 14-16 April, 2016. Vancouver, Canada. Invited Speaker

Krigstin, S. 2016. Bioeconomy Research, Innovation and Commercialization. Bioeconomy Research and Innovation Forum Day, October 24, 2016. Bioindustrial Innovation Canada, University of Guelph. Invited Speaker.

Morris, D.M., Kwiaton, M.M., Koste, E., Johnson, K., Krigstin, S., and Wetzel, S. 2016. The effects of in-bush chipper debris on soil microclimate, leachate chemistry, and tree seedling survival and growth. In Soil Sci. Soc. Am. Annual Meeting, Phoenix, Az, Nov.7-10, 2016.

Wetzel, S., Volpe, S., Rosser, D., Krigstin, S., Sameni, J. and K. Johnson. 2015. Storage phase as pretreatment to optimize biomass quality. FPInnovates Innovation and Technology Conference. 25-26 November, 2015. Montreal, Quebec.

Wetzel, S. and S. Krigstin. 2015. Can woody residues support a pellet industry? Eastern Ontario as a Case Study. Canadian Institute of Forestry Webinar. March 11, 2015.

Sameni, J., Xu, J., Krigstin, S. and M.Sain. 2013. Biobased pots with controlled biodegradation feature for horticultural industry. BioNIB 2nd Annual meeting, Nov 22, 2013. University of Guelph. 2nd prize poster award.

Barrette, J., Thiffault, E., Wetzel, S., Duchesne, I. and S. Krigstin. Using salvaged trees for the production of bioenergy. Abstract for the Fourth International Forest Biorefinery Symposium (February 3-4, 2014) at the Queen Elizabeth Hotel in Montreal.

Khan, S., Krigstin, S., Volpe, S., and S. Wetzel. 2013. Value of essential oils from stored forest biomass in Eastern Canada. Bioeconomy Research Highlights Day 2013. Hosted by OMAF and MRA at University of Guelph (Nov 27, 2013) Poster

Gupta, G., Krigstin S., and S. Wetzel. 2013. A survey of chloride content of Great Lakes St. Lawrence Forest Biomass, as source of EU export pellets. Bioeconomy Research Highlights Day 2013. Hosted by OMAF and MRA at University of Guelph (Nov 27, 2013) Poster

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Sameni J., Xu, J., Krigstin, S. and M. Sain. 2013. Biobase pots with controlled biodegradation feature for horticultural industry. Bioeconomy Research Highlights Day 2013. Hosted by OMAF and MRA at University of Guelph (Nov 27, 2013) Poster

Wetzel, S. and S. Krigstin, invited speaker hardwood biomass talk November 2013

Krigstin, S.G. 2013. Doing more with Eastern Canada's Forest Resource. Forest Products Society Annual General Meeting "The Global Forest Products Market Place – Can Eastern Canada Compete?" May 29 – 30, 2013. Fredericton, NB. (Invited speaker)

Krigstin, S.G. 2013. Hydrophobic pulp moulded products – meeting the demand for sustainable products. IMFA's 16th International Molded Fiber Packaging Seminar. April 25-26, 2013. Toronto, Canada. (Invited speaker)

Krigstin, S.G., Gupta, G. and S. Wetzel. 2012. Innovative utilization of forest harvest residue: examining effects of fractionation and storage on raw material quality for panel products and energy. Forest Product Research Society 66th International Convention. June 3-5, 2012. Washington, D.C.

Krigstin, S.G., Sameni, J. and M. Sain. 2012. Commercialization of Lignin-Based Products for the Horticultural Market. 12th International Conference on Biocomposites. May 6-8, 2012 Niagara Falls, Canada.

Krigstin, S.G., Wetzel, S. and D. Cormier. 2011. Valuation of Biomass Harvesting in Eastern Ontario Mixedwood Stands. All About Bio-Energy: Suppliers, Manufacturers and Small Communities. Bancroft/Pembroke, ON. February 15-16, 2011.

Krigstin, S.G., Wetzel, S. and D. Cormier. 2010. The role of integrated feedstock management in establishment of new markets. Natural Resources Canada meeting November 2010, Jasper, AB.

Krigstin, S.G., Wetzel, S. and D. Cormier. 2010. Valuation of Biomass Harvesting in Eastern Ontario Mixedwood Stands. I.E.A. Task 43, Kamloops, B.C. June 1-4, 2010.

Krigstin, S.G. 2009. Implications of Biomass Quality on Pellet Production from Trial Harvests in Eastern Ontario. Harnessing Biomass: From the Forest to the Market Place. Nipissing University. October 22-23, 2009.

Levin, R. and S.G. Krigstin. 2009. The Forest Industry in Eastern Ontario: Economic Downturn & Bioenergy Potential. Harnessing Biomass: From the Forest to the Market Place. Nipissing University. October 22-23, 2009.

Krigstin, S.G. and M. Sain. 2007. Utilization of Recycled Papermill Sludge for Value-Added Bio-Products. 9th Annual Society of Plastics Engineers of Ontario Industry University Night. Poster Session, March 15, 2007. Toronto, Ontario.

Krigstin, S.G., and Sain, M. Exploration into the Fractionation Potential of Recycled Papermill Sludge for Developing Engineered Bio-Materials. 13th Annual Graduate Student Research Conference. Applied Chemistry and Chemical Engineering, University of Toronto, June 19, 2006.

Krigstin, S. and M. Sain. Utilization of Recycled Papermill Sludge for Value-Added Bio-Products. Ontario Centres of Excellence, Discovery 2006 - Bridging the Innovation to Commercialization Gap. Poster Session, February 7, 2006 [No.18]. Toronto, Ontario.

Krigstin, S. and M. Sain. Utilization of Recycled Papermill Sludge for Value-Added Bio-Products. 2006. Canadian Pulp and Paper Graduate Student Seminar. 92nd PAPTAC Annual Meeting, Montreal, PQ, February 9, 2006.

Krigstin, S.G., and Sain, M. Beneficial Utilization of Pre-treated Paper Mill Sludge. 12th Annual Graduate Student Research Conference. Awarded the Best Paper of the Conference. Applied Chemistry and Chemical Engineering, University of Toronto, June 9, 2005.

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Krigstin, S and M. Sain. 2005. Beneficial utilization of Pre-treated paper mill sludge. Environmental Consortium meeting, Dept. Applied Chemistry and Chemical Engineering, University of Toronto, May 10, 2005.

Krigstin, S.G. and Sain, M. Characterization and Potential Utilization of Recycled Paper Mill Sludge. 91th PAPTAC Annual Meeting, Montreal, PQ, Feb., 2005

Krigstin, S.G. 1991. Print characteristics of 100% recycled newsprint. Printing Session. Paptac annual meeting, Montreal, Canada

Krigstin, S.G. and D.N. Roy. 1985. Contribution of the chemical components in juvenile hybrid *Salix* spp. To its total energy output. Chemistry Technical Session, 39th Annual Forest Products Research Society Meeting, Orlando, Florida, June 1985.

Krigstin, S.G. and D. N. Roy. 1984. Energy Output of Hybrid Willow. United Nations International Poplar Commission, 17th Session, Ottawa, Canada.

H. Teaching and Design

1. INNOVATIONS AND DEVELOPMENT IN TEACHING AND EDUCATION

[Presented in reverse chronological order]

2012 to present	Course Instructor, Discovering Wood and its Role in Societal Development. 3 rd & 4 th year Applied Science and Engineering students, University of Toronto, Toronto, ON, Canada.
2008 to present	Course Instructor, Bioenergy and Biorefinery Technologies. 4 th year Applied Science and Engineering students, University of Toronto, Toronto, ON, Canada.
2018	Course Instructor. Innovation in Design and Manufacturing of Sustainable Materials. 4 th year Applied Science and Engineering students, University of Toronto, Toronto, ON, Canada
2012 to present	Course Coordinator. Internship in Forest Conservation. Professional Master in Forest Conservation students. School of Graduate Studies, University of Toronto, Toronto, ON, Canada
2012 to 2016	Course Coordinator. Capstone Paper in Forest Conservation, Professional Master in Forest Conservation students. School of Graduate Studies, University of Toronto, Toronto, ON, Canada
2012 to present	MFC recruitment sessions – minimum of 2 per year.
2012 to present	MFC 4 day Orientation
2015	Professional Accreditation review of Master in Forest Conservation program.
2013	Designed and develop “new” Renewable Resource Engineering Certificate – Faculty of Applied Science and Engineering.
2012	MFC Winter field camp, Mattawa, ON
2008	Designed and developed “new” major/minor programs in Faculty of Arts and Science at the University of Toronto (<i>Forest Biomaterials Science</i>)

I. Research Supervision

1. PRIMARY OR CO-SUPERVISION

Undergraduate Education - Incomplete

2016-2017	B.Sc. N. Jayabala, Faculty of Forestry, 4 th Year Thesis: Health and safety incidences from biomass storage.
2013-2014	B.Sc. S. Li. Faculty of Forestry, 4 th Year Thesis: Surface modified nanocellulose fibers for polymer nanocomposites.
2013-2014	B.Sc. J. Xu. Faculty of Forestry, 4 th Year Thesis: Biodeterioration of biobinder samples.
2011	B.Sc. T. Liu. Faculty of Forestry, Directed Readings: Long term effects on the environment in Great-Lakes-St. Lawrence Region induced or enhanced by Whole Tree Harvest.
2010-2012	B.Sc. T. Liu. Faculty of Forestry, 4 th year Thesis: Toronto's Urban Forest Residues – Source of Mulch, Waste or Fuel for Cogeneration?
2009	B.Sc. S. Khan. Faculty of Forestry, Directed Reading and 4 th year thesis: Yields and characterization of Essential Oils from stored forest biomass in Eastern Canada.

Graduate Education

2018-current	M.Sc.F. J. Stellato, Faculty of Forestry, Supervisee Institution: University of Toronto.. Co-Supervisor(s): S. Krigstin, M. Sain. Starting September 2018.
2015-2017	M.Sc.F. K. Johnson, Faculty of Forestry, Supervisee Institution: University of Toronto. Investigating the Differences Between the storage of Bark and Wood Through the Use of Computer Simulation. Supervisor(s): S. Krigstin. Completed 2017.
2010 - 2015	Ph.D. J. Sameni, Faculty of Forestry, Supervisee Institution: University of Toronto.. Physico-Chemical Characterization of Lignin Isolated from Industrial Sources for Advanced Applications. Supervisor(s): S. Krigstin, M.Sain. Completed 2015.
2008 – 2013	Ph.D. D. Tudor, Faculty of Forestry, Supervisee Institution: University of Toronto. Fungal Pigment Formation in Wood Substrate. Supervisor(s): S. Krigstin, P. Cooper. Completed 2013
2008 - 2010	M.Sc.F. G. Ewurama Acquah, Faculty of Forestry, Supervisee Institution: University of Toronto. Characterization of forest harvest residue from the Great Lakes-St. Lawrence forests of South-Eastern Ontario. Supervisor(s): S. Krigstin, P. Cooper. Completed 2010.

Supervision of Master in Forest Conservation Capstone Papers

- 2018 **MFC.** G. Lin, Faculty of Forestry, Supervisee Institution: University of Toronto. Exploring the relationship between ambient air temperature and internal temperature of woody biomass piles during field storage in Pineland Manitoba.
- 2018 **MFC.** X. Huang, Faculty of Forestry, Supervisee Institution: University of Toronto. Single tree urban inventory updates.
- 2017 **MFC.** H. Jia, Faculty of Forestry, Supervisee Institution: University of Toronto. The performance of Dwarf Alberta Spruce *Picea glauca* 'Conica' in urban landscape.
- 2017 **MFC.** C. Helmeste, Faculty of Forestry, Supervisee Institution: University of Toronto. Development of an inventory practice for rare lichen species within Thousand Islands National Park.
- 2017 **MFC.** G. Wang, Faculty of Forestry, Supervisee Institution: University of Toronto. The importance of ArbNet Accreditation program for Arboreta.
- 2016 **MFC.** Y. Chen, Faculty of Forestry, Supervisee Institution: University of Toronto. A mathematical model to predict CO₂ emissions from woody biomass storage piles.
- 2015 **MFC.** R. Huang, Faculty of Forestry, Supervisee Institution: University of Toronto. Markets for woody sawmill residues in Ontario.
- 2014 **MFC.** D. Li, Faculty of Forestry, Supervisee Institution: University of Toronto. A feasibility and cost study of a pellet plant in the Bancroft area, Ontario.
- 2013 **MFC.** M. Alkema, Faculty of Forestry, Supervisee Institution: University of Toronto. A critical review of private tree protection legislation of urban areas in Ontario.
- 2012 **MFC.** M. Thiel, Faculty of Forestry, Supervisee Institution: University of Toronto. Biomass volume and cost projections for the Petawawa Research Forest.
- 2012 **MFC.** C. Leduc, Faculty of Forestry, Supervisee Institution: University of Toronto. Hardwood sawmill efficiency and residue production at the Haliburton Forest Reserve sawmill: Validation of a sawmill residue model.
- 2012 **MFC.** J. Martineau, Faculty of Forestry, Supervisee Institution: University of Toronto. A multi-species turtle stewardship plan for the Raisin Region Conservation Authority.

Supervision of Master in Forest Conservation Alternate Field Course

- 2019 **MFC.** V. London, Faculty of Forestry, University of Toronto, Toronto, ON, Canada
- 2018 **MFC.** M. Cyzdik, Faculty of Forestry, University of Toronto, Toronto, ON, Canada
- 2018 **MFC.** E. Peden, Faculty of Forestry, University of Toronto, Toronto, ON, Canada
- 2017 **MFC.** G. Prevost, Faculty of Forestry, University of Toronto, Toronto, ON, Canada
- 2017 **MFC.** S. Kainula, Faculty of Forestry, University of Toronto, Toronto, ON, Canada

Supervision of Directed Reading Course - Incomplete

Sally KRIGSTIN

- 2018 **PhD.** A. Gorgolewski, Methane emissions from stored sawmill residues. Faculty of Forestry, University of Toronto, Toronto, ON, Canada
- 2017 **MFC.** C. Preece, Catalogue Faculty of Forestry wood collection. Faculty of Forestry, University of Toronto, Toronto, ON, Canada
- 2017 **MFC.** M. Lefebure, Catalogue Faculty of Forestry wood collection. Faculty of Forestry, University of Toronto, Toronto, ON, Canada

1. OTHER SUPERVISION

Thesis Committee Member

- 2016 – on-going **3rd year Ph.D.**. Supervisee Name: R. Gabhi, Department of Chemical Engineering and Applied Chemistry. Supervisee Institution: University of Toronto. *Electrical Conductivity of Biomass-derived Nanoporous Biochar*. Supervisor(s): Supervisor: Prof. C. Jia.
- 2013 – 2018 **5th year Ph.D.**. Supervisee Name: B. KC, Faculty of Forestry. Supervisee Institution: University of Toronto. *Investigation of shrinkage in injection molded sisal/glass fibre hybrid biocomposites.* Supervisor(s): Supervisor: Prof. M.Sain.
- 2016 **Ph.D.**. Supervisee Name: H. Hajiha, Department of Chemical Engineering. Supervisee Institution: University of Toronto. Impact Behaviour of Hybrid Long Fibre Thermoplastic Composites. Supervisor(s): Supervisor: Prof. M. Sain.
- 2011- 2016 **Ph.D.**. Supervisee Name: W. Ding, Department of Mechanical Engineering. Supervisee Institution: University of Toronto. Development of Cellulose Nanofiber Reinforced Polylactic Acid Biocomposite Foams via Extrusion Processes. Supervisor(s): Supervisor: Prof. C. Parks
- 2010- 2016 **Ph.D.**. Supervisee Name: H. Hajiha, Department of Chemical Engineering and Applied Chemistry.. Supervisee Institution: University of Toronto. Renewable, Recyclable and Lightweight Structural Prototype Greener Auto Par. Supervisor(s): Supervisor: Prof. M. Sain.
- 2008- 2013 **Ph.D.**. Supervisee Name: M. Pervais, Faculty of Forestry. Supervisee Institution: University of Toronto. Investigation of the bonding mechanism of secondary sludge and its potential use as wood adhesive. Supervisor: Prof. M. Sain.
- 2008- 2012 **Ph.D.**. Supervisee Name: P. Ralevic, Faculty of Forestry. Supervisee Institution: University of Toronto. Evaluating the greenhouse gas mitigation potential and cost-competitiveness of forest bioenergy systems in Ontario. Supervisor: Prof. T. Smith.
- 2008- 2012 **Ph.D.**. Supervisee Name: A. Martin, Faculty of Forestry. Supervisee Institution: University of Toronto. Ecophysiology and wood carbon content in tropical trees: A comparative study of island and mainland Neotropical species. Supervisor: Prof. S. Thomas.

Thesis Examiner - Incomplete

- Oct 2011 **Ph.D.** Supervisee Name: S. Migneault, Supervisee Institution: University of Laval. Recyclage des résidus papetiers pour la production de panneaux de fibres. Supervisor: Prof. B. Riedl.

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Qualifying/Reclass Examiner - Incomplete

June 2018

Ph.D. Supervisee Name: Antimo Graziano, Faculty of Forestry. Supervisee Institution: University of Toronto. Supervisor: Prof. M. Sain.

Postdoctoral Research Fellow (PhD)

Cheryl Leger

Research Associate-incomplete

J. Creative Professional Activities

2. CONTRIBUTIONS TO THE DEVELOPMENT OF PROFESSIONAL PRACTICES

1. JUDGE FOR 2017 ONTARIO ENVIROTHON COMPETITION

2. JUDGE FOR 2016 NORTH AMERICAN ENVIRONTHON COMPETITION

3. EXEMPLARY PROFESSIONAL PRACTICE