

20 Mar 2015

Dr. Todd Randall
Acting Dean
Faculty of Science and Environmental Studies

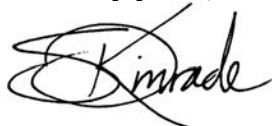
Dear Dr. Randall:

The Department of Chemistry has voted in favour of recommending *Adjunct Professor* status in our department for the following candidates.

- Roxanne Deslauriers, PhD (Scientific Director, Thunder Bay Regional Research Institute)
- Lew Christopher, PhD (Director, Biorefining Research Institute)

Please find their application packages attached.

Sincerely yours,



Stephen D. Kinrade, PhD, FRSC(UK)
Professor and Acting Chair



Biorefining Research Institute (BRI)
1294 Balmoral St., Thunder Bay ON P7B 5E1
t: (807) 343-8844 f: (807) 343-8240
e: lchristo@lakeheadu.ca

March 16, 2015

SES Faculty Council
Lakehead University

Application for Adjunct Status in Chemistry

Herewith I would like to apply for Adjunct Status at the Department of Chemistry. Success in this application would help me as Director of the Biorefining Research Institute (BRI) at Lakehead University gain access to the graduate programs of Chemistry, and potentially recruit students interested in obtaining graduate degrees in Chemistry and Materials Science (PhD) and Chemistry (MS) while working on BRI-related research projects. I trust that the above would be mutually beneficial to both the Chemistry Department and BRI.

BRI is a multidisciplinary, research-intensive center that utilizes the knowledge and expertise of faculty, researchers, and students from several academic units at Lakehead University, including Chemistry. BRI actively supports undergraduate and graduate programs at Lakehead University, and is committed to excellence in the training and education of students as the new workforce of the emerging bio-based society.

Please find attached my CV.

Thank you for your consideration.

Sincerely,

A handwritten signature in black ink, appearing to read "Lew Christopher".

Lew Christopher

Lew P. Christopher, Ph.D., P.E.
Director, Biorefining Research Institute (BRI)
Senior Ontario Research Chair
Lakehead University
1294 Balmoral St., Suite 3001C
Thunder Bay P7B 5Z5

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Curriculum Vitae

Lew P. Christopher

Director, Biorefining Research Institute (BRI)
 Senior Ontario Research Chair
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 1294 Balmoral St., Suite 3001C
 Thunder Bay P7B 5Z5
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 Email: lew.christopher@lakeheadu.ca

Education

Higher Institute for Chemical Engineering	Chemical Engineering	M.S.
Academy of Sciences, Microbiology Institute	Biotechnol./Biochem. Eng.	Ph.D.
University of the Orange Free State	Bioprocessing	Post-doc

Appointments

2014-Present Director, Biorefining Research Institute (BRI) & Senior Ontario Research Chair in Biorefining Research, Lakehead University, Thunder Bay, ON, Canada
 Duties: Provide leadership to a multi-disciplinary team consisting of faculty, researchers and students from several departments at Lakehead University: Biology, Chemistry, Chemical Engineering, Environmental Engineering, Natural Resources Management and Northern Ontario School of Medicine; direct research and development at BRI to achieve the goal of developing transformative, cost-effective and environmentally-sound technologies and products from renewable resources as a substitute for imported oil-based fuels and petrochemicals; work toward the mission to serve the forest products sector, other fibre-processing industries and regional communities in Northern Ontario, and contribute to the socio-economic prosperity of the region; operate BRI with the vision of creating a world-class Centre of Excellence that is among the national and international leaders in biomass research; foster internal and external collaboration towards Biorefining and bioprocess technologies; provide a nurturing environment to support development of junior faculty, graduate and undergraduate students; conduct workshops in bioprocesses that encourage and promote Biorefining research; obtain funding for projects that advance the aims of BRI; support the translation of basic research into tangible outcomes; provide extension services to the public and industry in the form of consultations, process and product development for the Integrated Forest Biorefineries.

2012-2014 Director, Center for Bioprocessing Research & Development (CBRD); Associate Professor (tenure-track), Department of Civil & Environmental Engineering (CEE); South Dakota School of Mines & Technology, Rapid City, SD, USA
 Duties: Provide leadership to a multi-disciplinary team of 130 researchers from 15 departments at 2 universities in SD; establish, upgrade & expand a nationally recognized research program on bioprocessing of lignocellulosic biomass to bioenergy and bioproducts; continuously strive to increase federal and non-state external funding by continuously readjusting funding priorities and reassessing Center's SWOT to maximize success rate of grant writing and applications; develop a strategic plan to address critical aspects of the CBRD long-term sustainability; grow /recruit /retain expertise for enhanced competitiveness and sustainable growth of CBRD; improve and upgrade infrastructure including equipment and facilities on a continuous basis; establish and equip a new CBRD laboratory on SDSM&T campus; prepare budgets & control expenses; prepare & present bi-annual reports; establish external advisory board (EAB) comprising representatives from industry, federal labs, government and non-profit organizations; hold annual EAB meetings

	to provide progress report and obtain feedback and direction on future R&D; train new workforce for the transition to bio-based economy in SD and beyond; maximize potential of internal CBRD collaborations & build strategic partnerships locally and externally; encourage and promote formation of spin-off companies to transition technology development to commercialization; interact with SD government, federal labs, industry and media; promote CBRD activities across the state, nation-wide and internationally; promote & assist R&D and commercialization of biofuels and bioproducts industry in SD; participate in CEE activities; teach existing and/or develop new CEE courses as per department needs; advise/co-advise/recruit graduate students; mentor research scientists.
2010-2012	Director, CBRD; Associate Professor (tenure-track), Department of Chemical & Biological Engineering, South Dakota School of Mines & Technology, Rapid City, SD, USA
2008-2010	Director & Professor (non-tenure), CBRD, South Dakota School of Mines and Technology, Rapid City, SD, USA
2004-2007	Professor & Head of Sappi Biotechnology Laboratory, Department of Chemical Engineering, University of Pretoria; Senior Research Scientist, Sappi Management Services Pty. Ltd., Pretoria, South Africa
Duties:	Supervise and direct research of a diverse research team of 10-15 consisting of graduate students and industrial scientists with multi-disciplinary and multi-racial background; establish, equip and manage two research laboratories – one in academic, and another – in industrial settings; prepare project proposals and manage existing research grants and budgets of several millions; prepare monthly, quarterly and annual progress reports to industry and funding agencies; hold regular quarterly and annual meetings with industry; carry out techno-economic evaluations of newly developed technologies; conduct pilot-plant and large-scale trials to verify new in-house technologies; disseminate results at international meetings and in peer-reviewed journals; establish, maintain and expand internal and external collaborations, both nationally and internationally; teach class and lab courses in biotechnology and biochemical engineering of relevance to research projects and grants.
1996-2004	Research Officer, Sappi Management Services Pty. Ltd., South Africa
1999-2004	Professor & Head of Sappi Biotechnology Laboratory, Department of Microbial, Biochemical & Food Microbiology, University of the Free State, South Africa
1996-1999	Lecturer, Department of Microbial, Biochemical & Food Biotechnology, University of the Free State, South Africa
1995-1996	Senior Researcher, Department of Microbial, Biochemical & Food Biotechnology, University of the Free State, South Africa
1992-1994	Post-doctoral Researcher, Department of Microbial, Biochemical & Food Biotechnology, University of the Free State, South Africa

Professional Activities

- Member of the Natural Resources Member of the Organizing Committee of the Canada (NRCan) Expert Panel on Investments in Forest Industry Transformation (IFIT), Ottawa, Canada, 12/2014
- Member-at-Large on Doctoral Advisory Committee, University of North Dakota, 2014-
- External Examiner for M.S. Thesis, Durban University of Technology, Durban, South Africa, 2014-
- Panellist Reviewer: NSF Engineering Research Centers (ERC) Proposal Panel, 10/2013
- Panellist Reviewer for U.S. Department of Energy (DOE): Great Lakes Bioenergy Research Center (GLBRC), 11/2013
- Who'sWho in America 2014, Marquis Who'sWho Publications, 68th Ed., 09/2013
- Ad-hoc Reviewer for U.S. Department of Agriculture - National Institute of Food and Agriculture (USDA NIFA), 07/2013
- Member of Biomedical Engineering Master's and Doctoral Program Advisory Council, South Dakota School of Mines & Technology, 2013-2014
- External Examiner, University of Manitoba, Canada, 04/2013

- Panellist Reviewer for U.S. Environmental Protection Agency - Small Business Innovation Research (EPA SBIR), 08/2012, 11/2013
- International Collaborator on Genome Canada Project “Microbial Genomics for Biofuels and Coproducts from Biorefining Processes” (MGCB2), 2012-
- Member of the International Scientific Advisory Committee of the Energy & Materials Research Conference (EMR), 6/2012, 2/2015
- Who's Who in Engineering Higher Education (WWEHE), 2012
- Member of the Science Advisory Board of the World Congress on Bioenergy (WCBE), 2011-2012
- Member of the Program Committee of Symposium on Enzymes & Biocatalysis (SEB), 2011-2012
- Ad-hoc Reviewer for U.S. Department of Agriculture - Small Business Innovation Research (USDA SBIR), 01/2011, 01/2012, 01/2013, 05/2013, 02/2014
- Member of the Biorefinery Committee of the Technical Association of the Pulp and Paper Industry (Tappi), 2010-
- Professional Engineer, Engineering Council of South Africa (ECSA), South Africa, 2008-
- Managing Director, Biorefinery World, LLC, 2012-
- Member of the Science Advisory Board of Myriant Corporation, Woburn, MA, 2010-2011
- Member of the International Scientific Advisory Committee on Renewable Resources and Biorefineries (RRB), 2009-2010
- Member of the Task Force for Development of Strategic Research Plan for the South Dakota School of Mines & Technology in the Focus Areas of *Energy & Environment*, *Materials & Manufacturing*, and *Biomedical Engineering*, 2009-2010
- Managing Director, Biorefinery International, LLC, 2008-2011
- Panel Expert on Bioprocessing Technologies for the National Research Foundation (NRF), South Africa, 2006-2008

Research Interests

- *Energy and Environmental Sustainability*: Integrated forest biorefineries, bioprocessing of renewable resources for sustainable production of biofuels and value-added biochemicals and biomaterials; environmentally sustainable solutions for municipal solid waste, industrial and waste water treatment plants
- *Biomedical Engineering*: Development of plant based natural compounds with important biomedical properties including anti-oxidant, anti-microbial, anti-tumor and other biological activities for use in a variety of pharmacological products

Research Output

• Books	4
• Book chapters	12
• Peer-reviewed articles	70
• Patents	8
• Provisional patents	1
• Invention disclosures	3
• Media coverage	19
• Invited presentations	37
• Presentations	257

Research Grants - South Africa (1997-2007): over R11.4 million (Government, Industry)

Research Grants - USA (2008-2014): \$7.5 million (NSF, DOE, USDA, DOD, SD GOED, Industry)

Learning Facilitation

- Trained and supervised over 45 graduate and undergraduate students, post-docs, research scientists, and research assistants in Chemical and Biochemical Engineering, Biotechnology, Biochemistry, and Microbiology:
 - Students: Ph.D. (11); M.S. (15); B.S. Hons. (5); UG Students (5)
 - Post-docs/Research Scientists: 5
 - Research Assistants: 6
- Courses taught: Biochemical Engineering (lecture and lab); Chemical Engineering Fluids (lab); Microbial and Enzymatic Processing (lecture); Environmental Engineering Unit Operations – Biological Treatment of Wastewater (lecture and lab)
- Served as External Examiner to graduate students in Chemical and Biochemical Engineering, Biosystems Engineering, Biotechnology, Biochemistry, and Microbiology

Research Mission

To add value to the national and global bio-economy by applying an integrated biorefinery approach in the research and development of cost effective and environmentally sound technologies for sustainable production of renewable biomass-derived energy and high value bioproducts

Rating (National Research Foundation, South Africa): *Internationally Recognized Established Researcher*

Honors: The 1996 Japan Society for the Promotion of Science (JSPS) Research Award

PhD Thesis: “Utilization of xylan and xylose containing sources of plant origin”

Summary: The purpose of the investigation was to evaluate the opportunities for utilization of xylan-rich agricultural residues (corn cobs, wheat bran, oat hulls, rye straw, etc) and industrial waste prehydrolyzate from the dissolving pulp viscose rayon industry for the simultaneous production of xylose and the enzyme glucose isomerase. The latter together with α -amylase and glucoamylase is used in the production of high-fructose syrups from corn starch. It was demonstrated that xylose could be obtained from the xylose-enriched hydrolyzates following several pretreatment, detoxification and purification steps. These hydrolyzates were shown to serve as a cost-effective substitute for xylitol which is traditionally used as carbon feedstock and inducer during glucose isomerase production. The research findings of this investigation were protected with three patent applications. In order to maximize the added value derived from plant biomass in a hypothetical biorefinery, a technological scheme for the complex utilization of these lignocellulosic materials was proposed.

Editorial Services

- *BioEnergy Research* (Associate Editor & Guest Editor)
- *British Journal of Applied Science and Technology* (Chief Editor - Chemical & Biological Engineering)
- *Frontiers in Bioengineering and Biotechnology* (Associate Editor – *Bioenergy and Biofuels*)
- *Frontiers in Microbiology* (Associate Editor - *Systems Microbiology & Topic Editor – Production and Application of Microbial Lipids*)
- *Institute of Integrated Omics and Applied Biotechnology IIOAB Journal* (Section Editor, Chemical Engineering & Bioprocessing)

Peer Reviewing (selected)

- *American Chemical Society*
- *Applied Biochemistry and Biotechnology*
- *Applied and Environmental Microbiology*
- *Applied Microbiology and Biotechnology*
- *BioEnergy Research*

- *Bioresource Technology*
- *Biotechnology Letters*
- *Current Microbiology*
- *Enzyme and Microbial Technology*
- *Extremophiles*
- *Journal of Biotechnology*
- *Journal of Chemical Technology and Biotechnology*
- *Journal of Industrial Microbiology and Biotechnology*
- *Journal of Renewable & Sustainable Energy*
- *Process Biochemistry*

Organizing Committees

- Member of the Organizing Committee of the 2015 Industrial Biotechnology Congress, Birmingham, UK, 8/2015
- Member of the Organizing Committee of the International Congress and Expo on Biofuels & Bioenergy, Valencia, Spain, 8/2015
- Member of the Organizing Committee of the International Forest Biorefinery Summit, Paper Week Canada, Montreal, Canada, 2/2015
- Member of the Organizing Committee of the International Energy Agency (IEA) Workshop “*Biotechnology for the Conversion of Lignocellulose*”, August 22-26, 1999, Itala Game Reserve, KwaZulu-Natal, South Africa
- Chairman of the Organizing Committee of the 9th *International Conference on Biotechnology in the Pulp and Paper Industry*, October 10-14, 2004, Durban, South Africa

Session Chair/Panel Moderator

- Paper Week Canada 2015, International Forest Biorefinery Summit (IFBS), Montreal, Feb 2-3, 2015 (Session IV: *Integrated Biorefineries*)
- 36th International Symposium on Biotechnology for Fuels and Chemicals (SBFC), Clearwater Beach, April 28-May 1, 2014 (*Bioprocessing, Reaction Design, and Separations Technology*)
- The 5th International Conference on Applied Energy, Pretoria, South Africa, July 1-4, 2013 (*Biodiesel*)
- 2012 AIChE National Meeting, Pittsburgh, PA, October 28 - November 2, 2012 (Process Development Division: *Bioprocessing of Lignocellulosic Biomass to Biofuels and Value-Added Bioproducts*)
- International Bioenergy & Bioproducts Conference (IBBC 2012), Savannah, GA, October 17-19, 2012 (Session 7: *Recent Advances in Enzymatic Saccharification*)
- International Symposium on Catalysis for Clean Energy and Sustainable Chemistry (CCES2012), Madrid, Spain, June 27-29, 2012 (*Plenary Lecture – Chemical Conversion of Biomass onto New Generations of Renewable Fuels, Polymers, and Value-Added Products*)
- The 2012 Energy & Materials Research Conference (EMR2012), Torremolinos, Spain, June 20-22, 2012 (*Energy Production from Biomass and Biofuels - part 2*)
- The 3rd Symposium on Enzymes & Biocatalysis, Xian, China, April 25-28, 2012 (Track 500: *Cellulosomes, Cellulases & Other Carbohydrate Modifying Enzymes*)
- The 2nd Annual World Congress of Bioenergy, Xian, China, April 25-28, 2012 (Track 1400: *Biorefinery/Bioprocess Tech*)
- 2012 International Biomass Conference & Expo, Denver, CO, April 16-19, 2012 (Track 5: *Advanced Biofuels & Biobased Chemicals*)
- The 2011 Annual AIChE Meeting, Minneapolis, MN, October 16-21, 2011 (Process Development Division: *Alternative Feedstocks for Energy and Chemicals*)

- The 2nd Symposium on Enzymes & Biocatalysis, Dalian, China, April 25-29, 2011 (Track 4-7: *Enzymes for Paper*)
- The 1st Annual World Congress of Bioenergy, Dalian, China, April 25-29, 2011 (Track 3-4: *Bioenergy from Wood and Forestry Technologies*)
- 2010 International Fuel Ethanol Workshop & Expo, St Louis, MO, June 14-17, 2010 (Track 3: *Cellulosic Ethanol: New Developments: Enzymes for Cellulosic Ethanol Production*)
- 2010 AIChE National Meeting, Salt Lake City, UT, November 7-12, 2010 (Forest Bioproducts Division 17 - Session: *Biorefinery-Improved Utilization of Co-Products from Biorefinery*)
- 6th Annual BIO World Congress on Industrial Biotechnology & Bioprocessing, Montreal, Canada, July 19-22, 2009 (Track 2 –Feedstocks and Sustainability: *Increasing the Value of Wood Based Lignocellulosic Fiber*)
- 31st Symposium on Biotechnology for Fuels and Chemicals, San Francisco, CA, May 3-6, 2009 (Session V: *Enzyme Science and Technology I*)
- 2002 Tappsa Pulp and Paper Week “Adding Value in a Global Industry”, Durban, South Africa, 2002
- 2000 Tappsa Pulp and Paper Week “2000 and beyond”, Durban, South Africa, 2000
- BIOY2K Combined Millenium Meeting 2000, Workshop “Biotechnology in the Pulp and Paper Industry”, Grahamstown, South Africa, 2000
- IAE Workshop "Biotechnology for the Conversion of Lignocellulose", Itala Game Reserve, South Africa, 1999
- Biotech SA '97, Grahamstown, South Africa, 1997

Collaborations (selected)

- University of Manitoba, Canada. Project: Genomics and proteomics of hydrogen-producing mesophiles and thermophiles (2011-2014)
- South Dakota State University, Brookings, SD, USA. Project: Development of biofuels and bioprocessing technologies in South Dakota (2008-2014)
- Technical University of Budapest, Budapest, Hungary. Project: Solid state fermentation of enzymes (1995-2007)
- Technical University of Vienna, Vienna, Austria. Project: Oxidative lignin-degrading enzymes (1999-2004)
- Slovak Academy of Sciences, Bratislava, Slovakia. Project: Mode of action of xylan-degrading enzymes (1998-2000)
- National Chemical Laboratory, Pune, India. Project: Screening and production of thermo-tolerant xylanolytic enzymes (1998-1999)
- University of Wisconsin Biotechnology Center and Institute for Microbial and Biochemical Technology, Madison, WI, USA. Project: Biopulping and biobleaching (1994-1999)

Professional Societies

- American Chemical Society (ACS), Division of Cellulose and Renewable Materials; Division of Biochemical Technology
- American Institute of Chemical Engineers (AIChE), Forest Bioproducts Division; Process Development Division
- American Society for Microbiology (ASM)
- Engineering Council of South Africa (ECSA)
- Pulp and Paper Association of Canada (PAPTAC)
- Society for Applied Microbiology (SfAM)
- Society for Biological Engineering (SBE)
- Society for Industrial Microbiology and Biotechnology (SIMB)

- Technical Association of the Pulp and Paper Industry (TAPPI)

Research Output

Books

1. Christopher, L.P., Ed. (2013) *Integrated Forest Biorefineries: Challenges and Opportunities*. Royal Society of Chemistry, Cambridge, UK (ISBN 978-184973-321-2).
2. Christopher, L.P. (2007) *Development of a Biotechnological Approach to the Management of Waste Waters from the Pulp and Paper Industry*, WRC No 763/1/07, Pretoria, South Africa, (ISBN No 978-1-77005-564-3).
3. Christopher, L.P. (2005) *Bio-remediation and Bio-utilization of Pulping and Bleaching Waste Waters*, WRC No 1367/1/05, Pretoria, South Africa (ISBN No 1-77005-291-7).
4. Christov, L.P. (2003) *Further Development of a Biotechnological Approach to the Management of Waste Waters from the Pulp and Paper Industry*, WRC No 1082/1/03, Pretoria, South Africa (ISBN No 1-86845-959-4).

Book chapters

1. Christopher, L.P. and Hemanathan, K. (2015) Clean and sustainable biodiesel production. In: (J. Yan, Ed.) *Handbook of Clean Energy Systems* (in press).
2. Christopher, L.P. (2013) Integrated forest biorefineries: Current state and development potential. In: *Integrated Forest Biorefineries: Challenges and Opportunities* (Christopher, L.P., Ed.), Royal Society of Chemistry, Cambridge, U.K., 2013, Chapter 1, pp. 1-66.
3. Christopher, L.P. (2012) Adding value prior to pulping: Bioproducts from hemicellulose. In: *Global Perspectives on Sustainable Forest Management* (Okia, C.A., Ed.), InTech, Rijeka, Croatia, 2012, Chapter 14, pp. 225-246.
4. Zambare, V.P., Zambare, A. and Christopher, L.P. (2011) Enzymatic hydrolysis of hemicellulose from corn stover and prairie cord grass. In: *Advances in Biotech Research* (Deshmukh, A.M., Jawalikar, J.D. and Waghmare, S.S., Eds.), Editors and Microbiologist Society, Osmanabad, India, 2011, pp. 300-313.
5. Christopher, L. Xylanases: Properties and applications (2004) In: *Concise Encyclopedia of Bioresource Technology* (Pandey, A., Ed.), The Haworth Press, Inc., Binghamton, NY, 2004, pp. 601-609.
6. Szendefy, J., Szakács, G. and Christopher, L. (2004) Biobleaching efficiency of *Aspergillus oryzae* xylanases produced by solid substrate fermentation. In: *Lignocellulose Biodegradation* (Saha, B. and Hayashi, K., Eds.), American Chemical Society, Washington, DC, 2004, pp. 316-338.
7. Szendefy, J., Szakács, G. and Christopher, L. (2003) *In situ* solid-state fermentation and utilization of xylanase in pulp bleaching. In: *Application of Enzymes to Lignocellulosics* (Mansfield, S. and Saddler, J.N., Eds.), American Chemical Society, Washington, DC, 2003, pp. 255-284.
8. Bissoon, S., Singh, S. and Christov, L. (2002) Evaluation of the bleach-enhancing effect of xylanases on bagasse pulp. In: *Biotechnology in the Pulp and Paper Industry* (Viikari, L. and Lantto, R., Eds.), Progress in Biotechnology, Elsevier, Amsterdam, pp 247-254. ISBN 0-444-51078-8
9. Kandioller, G. and Christov, L. (2001) Evaluation of the delignification and bleaching abilities of selected laccases with HBT on different pulps. In: *Oxidative Delignification Chemistry: Fundamentals and Catalysis* (Argyropoulos, D.S., Ed.), chap. 27, ACS Symp. Ser. 785, American Chemical Society, Washington, D.C., pp. 427-443.
10. Ferraz, A., Christov, L.P. and Akhtar, M. (1998) Fungal pretreatment for organosolv pulping and dissolving pulp production. In: *Environmentally Friendly Pulping and Bleaching Methods* (Young, R.A. and Akhtar, M., Eds.), chap. 13, John Wiley & Sons, Inc., New York, pp. 421-447.
11. Christov, L.P. & B.A. Prior (1996) Reduction of active chlorine charges in bleaching of xylanase-pretreated sulfite pulp. In: *Enzymes for Pulp and Paper Processing* (Jeffries, T.W., and Viikari, L.,

- eds.), chap. 16, ACS Symp. Ser. 655, American Chemical Society, Washington, D.C., pp. 208-227.
12. Christov, L.P., Akhtar, M. and Prior, B.A. (1996) Biobleaching in dissolving pulp production. In: *Biotechnology in the Pulp and Paper Industry: Recent Advances in Applied and Fundamental Research* (Messner, K. and Srebotnik, E., Eds.), Facultas Universitätsverlag, Vienna, pp. 625-628.

Peer-reviewed articles

1. Christopher, L.P., Zambare V.P., Zambare, A., Hemanathan, K. and Malek, L. (2015) A thermo-alkaline lipase from a new extremophile *Geobacillus thermodenitrificans* AV-5 with potential application in biodiesel production. *J. Chem. Technol. Biotechnol.* (in press).
2. Upadhyaya, B., DeVeaux, L.C. and Christopher, L.P. (2014) Metabolic engineering as a tool for enhanced lactic acid production. *Trends Biotechnol.* 32: 637–644.
3. Brzonova, I., Kozliak, E., Kubátová, A., Chebeir, M., Qin, W., Christopher, L. and Yun, J. (2014) Kenaf biomass biodecomposition by Basidiomycetes and Actinobacteria in submerged fermentation for production of carbohydrates and phenolic compounds. *Bioresour. Technol.* 173: 352-360.
4. Christopher, L.P., Kapatral, V., Vaisvil, B., Emel, G. and DeVeaux, L.C. (2014) Draft genome sequence of a new homofermentative lactic acid-producing *Enterococcus faecalis* isolate CBRD01. *Genome Announc.* 2(2):e00147-14. DOI:10.1128/genomeA.00147-14.
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3968327/pdf/e00147-14.pdf>
5. Raj, S.M., Talluri, S. and Christopher, L.P. (2014) Enhanced lactic acid production by a novel homofermentative *Enterococcus faecalis* isolate. *Microb. Biotechnol.* DOI: 10.1111/1751-7915.12133
<http://onlinelibrary.wiley.com/doi/10.1111/1751-7915.12133/pdf>.
6. Christopher, L.P., Yao, B. and Ji, Y. (2014) Lignin biodegradation with laccase-mediator systems. *Front. Energy Res.* 2: 1-13. <http://journal.frontiersin.org/Journal/10.3389/fenrg.2014.00012/full>
7. Christopher, L.P., Hemanathan, K. and Zambare, V.P. (2014) Enzymatic biodiesel: Opportunities and challenges. *Appl. Energy* 119: 497-520.
8. Talluri, S., Raj, S.M. and Christopher, L.P. (2013) Consolidated bioprocessing of untreated switchgrass to hydrogen by the extreme thermophile *Caldicellulosiruptor saccharolyticus* DSM 8903. *Bioresour. Technol.* 139: 272-279. <http://dx.doi.org/10.1016/j.biortech.2013.04.005>.
9. Zambare, V., Barh, D. and Christopher, L.P. (2012) Optimization of enzymatic hydrolysis of prairie cordgrass for improved ethanol production. *J. Renew. Sustain. Energ.* 4, 033118; DOI: 10.1063/1.4729587.
10. Zambare, V. and Christopher, L.P. (2012) Biopharmaceutical potential of lichens. *Pharma. Biol.* 50:778-798. DOI: 10.3109/13880209.2011.633089.
11. Hollmann, A., Saviello, M., Delfederico, L., Saraiva, T.D.L., Barh, D., Jain, N., Tiwari, S., Chandra, S., Gupta, K., Zambare, V., Kumar, A., Christopher, L., Misra, A.N., Kumavath, R.N., Azevedo, V., Semorile, L. and Miyoshi, A. (2012) Tight controlled expression and secretion of *Lactobacillus brevis* SlpA in *Lactococcus lactis*. *Biotechnol. Lett.* 34: 1275-1281. DOI: 10.1007/s10529-012-0887-6.
12. Subramanian, M.R., Talluri, S. and Christopher, L.P. (2012) Thermophilic hydrogen production from renewable resources: Current status and future perspectives. *Bioenerg. Res.* 5: 515-531. DOI 10.1007/s12155-012-9184-4.
13. Zambare, V. and Christopher, L.P. (2012) Optimization of enzymatic hydrolysis of corn stover for improved ethanol production. *Energy Explor. Exploit.* 30: 193-206.
14. Christopher, L.P. (2011) Biomass bioprocessing. *Bioenerg. Res.* 4: 223-224.
15. Zambare, V. and Christopher, L.P. (2011) Response surface analysis of cellulase production in *Bacillus* sp. SB-18. *Int. J. Food Ferment. Technol.* 1: 63-68.
16. Zambare, V., Bhalla, A., Muthukumarappan, K., Sani, R. and Christopher, L.P. (2011) Bioprocessing of agricultural waste to ethanol utilizing a cellulolytic extremophile. *Extremophiles* 15: 611-618.

17. Zambare, V. and Christopher, L. (2011) Optimization of culture conditions for production of cellulase by a thermophilic *Bacillus* strain. *J. Chem. Chem. Eng.* 5: 521-527.
18. Zambare, V., Zambare, A., Muthukumarappan, K. and Christopher, L.P. (2011) Biochemical characterization of thermophilic lignocellulose-degrading enzymes and their potential for biomass bioprocessing. *Int. J. Energ. Environ.* 2: 99-112.
19. Zambare, V. and Christopher, L.P. (2011) Statistical analysis of cellulase production in *Bacillus amyloliquefaciens* UNPDV-22. *Extreme Life, Biospeology & Astrobiology Int. J. Bioflux Soc.* 3: 38-45.
20. Zambare, V., Zambare, A., Muthukumarappan, K. and Christopher, L.P. (2011) Potential of thermostable cellulases in bioprocessing of switchgrass to ethanol. *BioResources* 6: 2004-2020.
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7. Mines Professor's new book forecasts the future of fuel, *Kota Territory News*, January 30, 2013. <http://mytown.kotatv.com/rapid-city/2013/01/30/mines-professors-new-book-forecasts-the-future-of-fuel/> and <http://news.sdsmt.edu/press/221543/>.
8. SD Biotech Association features Mines research. *SDSM&T Website*, May 15, 2012. <http://news.sdsmt.edu/press/189637>; full story – *SD Biotech Association Website*, http://www.sdbio.org/featured_detail.php?iFEAID=18.

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Patents

1. Christopher, L.P., Subramanian, M.R. and Talluri, S. Microorganism and method for lactic acid production. *U.S. Pat. Appl. 14/109,587*, Dec. 17, 2013.
2. Christov, L, du Preez, J.C. and Szakacs, G. (2002) Process for bio-utilization of industrial waste water. *S.A. Pat 2002/4532*.
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4. Christov, L.P. and Prior, B.A. (1996) Biopulping and biobleaching of sulphite pulp for producing dissolving pulp. *S.A. Pat 1996/4590*.
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6. Christov, L.P., Stoychev, M., Grigorova, Y., Djejeva, G. and Draganova, R. (1990) Nutritious medium for producing glucose isomerase. *BG Pat 85,943*.
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Provisional patents

1. Improved pharmacological products containing natural compounds with anti-oxidant, anti-microbial, and anti-tumor activities. *U.S. Pat Appl Docket No.PI0873US00*, Oct. 25, 2013.

Invention disclosures

1. Microorganism and method for biohydrogen production via consolidated bioprocessing of lignocellulosic biomass, January 30, 2012, South Dakota School of Mines and Technology.
2. Utilization of freshwater diatom *Didymosphenia geminata*, September 22, 2011. South Dakota School of Mines and Technology.
3. High performance lactic acid producing microorganism and lactic acid production process, September 7, 2011. South Dakota School of Mines and Technology.

Invited presentations

- 2014 Lignocellulosic Biorefineries: The Way Forward. Technical University of Hamburg, Hamburg, Germany, June 27, 2014.
- 2014 Forest Products Biorefineries: Factories for Complex Utilization of Biomass. KTH Royal Institute of Technology, Stockholm, Sweden, March 24, 2014.
- 2014 Biorefining of Lignocellulosic Biomass for Sustainable Production of Biofuels and Value-Added Bioproducts. Lakehead University, Thunder Bay, Canada, February 25, 2014.
- 2013 Potential for Bioenergy Research and Development in South Dakota. Durban University of Technology, Durban, South Africa, June 27, 2013.
- 2013 Potential for Bioenergy Research and Development in South Dakota. University of the Free State, Bloemfontein, South Africa, June 14, 2013.
- 2013 Biofuel and Biochemical Production in an Integrated Forest Biorefinery. University of Manitoba, Winnipeg, Canada, April 9, 2013.
- 2012 Thermophilic Bioprocessing of Lignocellulosic Biomass to Biofuels. Institute of Catalysis and Petrochemicals, Spanish Council for Scientific Research (CSIC), Madrid, Spain, July 2, 2012.
- 2012 Discovery and Exploitation of Extremophiles in Bioenergy Production. Institute of Enzyme Engineering, Shannxi Academy of Sciences, Xi'an, China, April 23, 2012.
(http://enzyme-tec.xab.cas.cn/xwdt/snxw/201206/t20120618_93578.html)
- 2012 Advantages of Thermostable Hydrolytic Enzymes in Biomass Conversion Processes. Northwestern Polytechnical University, Xi'an, China, April 24, 2012.
- 2011 Discovery and Exploitation of Thermophiles for Biofuel Production. University of Manitoba, Winnipeg, Canada, November 18, 2011.
- 2011 Potential of a Thermophilic Isolate and Its Enzymes in Ethanol Fermentation of Switchgrass. *2011 SIM Annual Meeting and Exhibition*, New Orleans, LA, USA, July 28, 2011.
- 2011 Bioenergy Initiatives at SDSM&T and South Dakota. Beihang University, Beijing, China, April 22, 2011.
- 2011 Bioprocessing Research and Development in South Dakota. Michigan State University, Lansing, MI, March 17, 2011.
- 2011 2010 Center for Bioprocessing Research and Development. Black Hills State University, Spearfish, SD, February 18, 2011
- 2011 2010 Center for Bioprocessing Research and Development, Presentation to the Congressional Government Affairs Team, South Dakota School of Mines and Technology, Rapid City, SD, February 4, 2011.
- 2010 Center for Bioprocessing Research and Development. South Dakota School of Mines and Technology, Rapid City, SD, March 2, 2010.
- 2009 Towards Sustainable Bioenergy in South Dakota. University of Hawaii at Manoa, Honolulu, HI, USA, November 12, 2009.
- 2008 Bioprocessing Research in South Dakota. DOE NREL, Golden, CO, USA, December 11, 2008.
- 2008 Challenges in Bioprocessing of Lignocellulose to Fuels and Chemicals. *2008 SIM Annual Meeting and Exhibition*, San Diego, CA, August 14, 2008.
- 2008 The Role of 2010 CBRD in SD Bio-Economy, Presentation to SD Utility Share Holders, Black Hills Business Development Center, SDSM&T, June 26, 2008.

- 2008 CBRD and the Bioprocessing Research in South Dakota. South Dakota State University, SD, USA, June 12, 2008.
- 2008 Towards the Development of Integrated Forest Biorefinery. Lakehead University, Thunder Bay, ON, Canada, January 16, 2008.
- 2007 Bioprocessing of Lignocellulose to Fuels and Chemicals. South Dakota School of Mines and Technology, Rapid City, SD, USA, October 19, 2007.
- 2007 Hemicellulose Bioprocessing to Evolve Existing Pulp Mills into Forest Biorefineries, University of Maine, Orono, ME, USA, April 5, 2007.
- 2002 In-situ Solid-state Fermentation and Utilization of Xylanase in Pulp Bleaching. Dept. of Microbiology, University of New Delhi South Campus, New Delhi, India, December 9, 2002.
- 2002 Use of Industrial Effluents for Enzyme Production. *43rd Annual Conference of the Association of Microbiologists of India (AMI)*, Hisar, India, December 13, 2002.
- 2000 Evaluation of the Delignification Abilities of Laccases from Selected White-rot Fungi on Different Pulp Types. The Finnish Pulp and Paper Research Institute (KCL), Espoo, Finland, August 23, 2000.
- 1999 Production and Application of *Gliocladium viride* Xylanase in Pulp Bleaching. *Sixth International Trichoderma-Gliocladium Workshop*, Espoo, Finland, June 15, 1999.
- 1999 Biotechnology in dissolving pulp manufacture. *1999 Tappi Pulping Conference*, Orlando, Florida, USA, November 2, 1999.
- 1998 Use of biotechnology to aid manufacture of chemical pulps. *Diamond Jubilee Symposium and 39th Annual Conference of the AMI*, Mangalore, India, December 8, 1998.
- 1998 Use of Biotechnology to Aid Manufacture of Chemical Pulps, CSIR, Trivandrum, India, December 11, 1998.
- 1996 Biobleachability of Sulphite Pulps. In: *Cellulases and Their Applications*, Seminar sponsored by PROBRAIN, Ehime University, Ehime, Japan, December 4, 1996.
- 1996 Pulp and Paper Biotechnology: An Overview. Gifu University, Gifu, Japan, December 2, 1996.
- 1996 Reduction of Active Chlorine Charges in Bleaching of Xylanase-pretreated Sulfite Pulp. University of Ghent, Ghent, Belgium, April 8, 1996.
- 1994 Biopulping and Biobleaching in Dissolving Pulp Manufacture, Department of Microbiology and Biochemistry. University of the Orange Free State, Bloemfontein, South Africa, August 15, 1994.
- 1994 Biotechnology in the Pulp and Paper Industry. S.A. Botany Society, University of the Orange Free State, Bloemfontein, South Africa, April 18, 1994.
- 1991 Production of Glucose Isomerase by *Streptomyces thermovulgaris*. Bulgarian Academy of Sciences, Sofia, Bulgaria, October 15, 1991.

Presentations

1. Christopher, L.P. (2015) Sustainable production of hydrogen by consolidated bioprocessing of lignocellulosic biomass. *International Forest Biorefining Summit, Paper Week Canada 2015*, February 2-3, 2015, Montreal, Canada.
2. Venkatesagowda, B., Malek, L., Christopher, L. Demethylation of kraft lignin using Boreal Forest inhabiting fungi. *International Forest Biorefining Summit, Paper Week Canada 2015*, February 2-3, 2015, Montreal, Canada.
3. Christopher, L.P., Brzonova, I., Chebeir, M., Kubatova, A., Kozliak, E. and Ji, Y. (2014) Selective production of low molecular weight aromatics from biomass by fungal and bacterial co-cultures. *SIMB 2014 Annual Meeting & Exhibition*, July 20-24, St. Louis, MO.
4. Yeash, E.A., Zhuang, Y., Miskimins, K. and Christopher, L.P. (2014) Biological activities of lichen extracts. *SIMB 2014 Annual Meeting & Exhibition*, July 20-24, St. Louis, MO.
5. Christopher, L.P. (2014) Hydrogen production from switchgrass by thermophilic isolates with consolidated bioprocessing capabilities. *SIMB 2014 Annual Meeting & Exhibition*, July 20-24, St. Louis, MO.

6. Adhikari, N., Zhuang, Y., Miskimins, K. and Christopher, L.P. (2014) Biologically active extracts from common milkweed seed oil. *SIMB 2014 Annual Meeting & Exhibition*, July 20-24, St. Louis, MO.
7. Seiler, S.T., Zhuang, Y., Miskimins, K. and Christopher, L.P., (2014) Pharmacological activities of corn cob xylan. *SIMB 2014 Annual Meeting & Exhibition*, July 20-24, St. Louis, MO.
8. Christopher, L.P. (2014) Advantages of thermophilic consolidated bioprocessing for sustainable production of hydrogen. *22nd European Biomass Conference and Exhibition (EU BC&E 2014)*, June 23-26, 2014, Hamburg, Germany.
9. Christopher, L.P., Brzonova, I., Chebeir, M., Kubatova, A., Kozliak, E. and Ji, Y. (2014) Selective microbial-based generation of low molecular weight aromatics from lignocellulosic biomass. *22nd European Biomass Conference and Exhibition (EU BC&E 2014)*, June 23-26, 2014, Hamburg, Germany.
10. Christopher, L.P., Seiler, S.T., Zhuang, Y. And Miskimins, K. (2014) Biopharmaceutical potential of xylan derived from corn cobs. *22nd European Biomass Conference and Exhibition (EU BC&E 2014)*, June 23-26, 2014, Hamburg, Germany.
11. Christopher, L.P. (2014) Thermophilic consolidated bioprocessing for sustainable hydrogen production. *36th Symposium on Biotechnology for Fuels and Chemicals*, April 28-May 1, 2014, Clearwater Beach, FL.
12. Christopher, L.P., Seiler, S.T., Zhuang, Y. And Miskimins, K. (2014) Biological activities of corn cob xylan. *36th Symposium on Biotechnology for Fuels and Chemicals*, April 28-May 1, 2014, Clearwater Beach, FL.
13. Christopher, L.P., Brzonova, I., Chebeir, M., Kubatova, A., Kozliak, E. and Ji, Y. (2014) Microbial production of low molecular weight phenolics and aromatics. *36th Symposium on Biotechnology for Fuels and Chemicals*, April 28-May 1, 2014, Clearwater Beach, FL.
14. Seiler, S., Zhuang, Y., Miskimins, K. and Christopher, L.P. (2014) Biomedical properties of xylan extracted from corn cobs. *5th Nordic Wood Biorefinery Conference (2014 NWBC)*, March 25-27, 2014, Stockholm, Sweden.
15. Christopher, L.P., Brzonova, I., Chebeir, M., Kubatova, A., Kozliak, E. and Ji, Y. (2014) Selective generation of biomass-derived aromatic compounds by lignolytic microorganisms. *5th Nordic Wood Biorefinery Conference (2014 NWBC)*, March 25-27, 2014, Stockholm, Sweden.
16. Christopher, L.P., Zambare, V.P., Bhalla, B., Muthukumarappan, K. and Sani, R.K. (2014) Bioethanol production from lignocellulosic biomass utilizing thermophilic cellulases. *5th Nordic Wood Biorefinery Conference (2014 NWBC)*, March 25-27, 2014, Stockholm, Sweden.
17. Christopher, L.P. (2013) Thermophilic consolidated bioprocessing of cellulosic materials to biohydrogen. *Bio Pacific Rim Summit on Industrial Biotechnology and Bioenergy*, December 8-11, 2013, San Diego, CA.
18. Brzonova, I., Chebeir, M., Kubatova, A., Kozliak, E., Christopher, L.P. and Ji, Y. (2013) Biodegradation of kenaf for production of low molecular weight phenolics. *Bio Pacific Rim Summit on Industrial Biotechnology and Bioenergy*, December 8-11, 2013, San Diego, CA.
19. Yeash, E.A., Knudsen, K., Zhuang, Y., Miskimins, K. and Christopher, L.P. (2013) Pharmaceutical potential of selected lichen species. *15th Annual NIH SBIR/STTR Conference*, October 28-30, 2013, Sioux Falls, SD.
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