

Building for the
Pulp and Paper
Community

FOR THE ADVANCEMENT OF THE FOREST INDUSTRY

FEATURING:

- **Inaugural Issue's Invited Review Paper:**
Towards a commercial production of
phage-based bioactive paper,
by T. Jabrane, M. Dubé, M. Griffiths
and P. J. Mangin
- **I.H. Weldon Award-Winning Paper:**
Near-neutral final chlorine dioxide
brightening: Theory and practice,
by Z.-H. Jiang and R. Berry



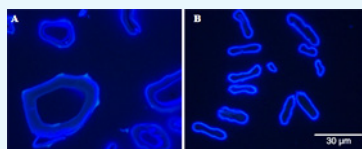
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Association technique des pâtes et papiers du Canada

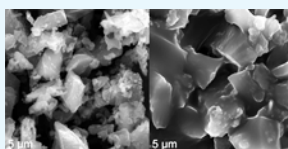
www.paptac.ca

TECHNICAL PAPERS

- 6 Towards a commercial production of phage-based bioactive paper
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Honghi Tran, PhD, P. Eng.



Paul R. Stuart, PhD, Eng.

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Greg M. Hay
Executive Director,
PAPTAC

5 PAPTAC NEWS UPDATE

- Industry partners day of the NSERC design engineering chair at Ecole Polytechnique a success!
- Over 1,000 new members join PAPTAC.
- The 2010 PAPTAC year in review is available.
- Fall 2011 meeting of the PAPTAC Bleaching Community.
- Come share and see the Canadian pulp and paper experience at PWC 2012.
- Launching of the Canadian Mill Managers Community.

5 MILL CHAMPION'S PROFILE



Don Olson

Process Engineering Superintendent and Energy Manager, Cariboo Pulp and Paper

Don Olson is a UBC Chemical Engineering graduate with 31 years of contribution to the industry.

PUBLISHER:

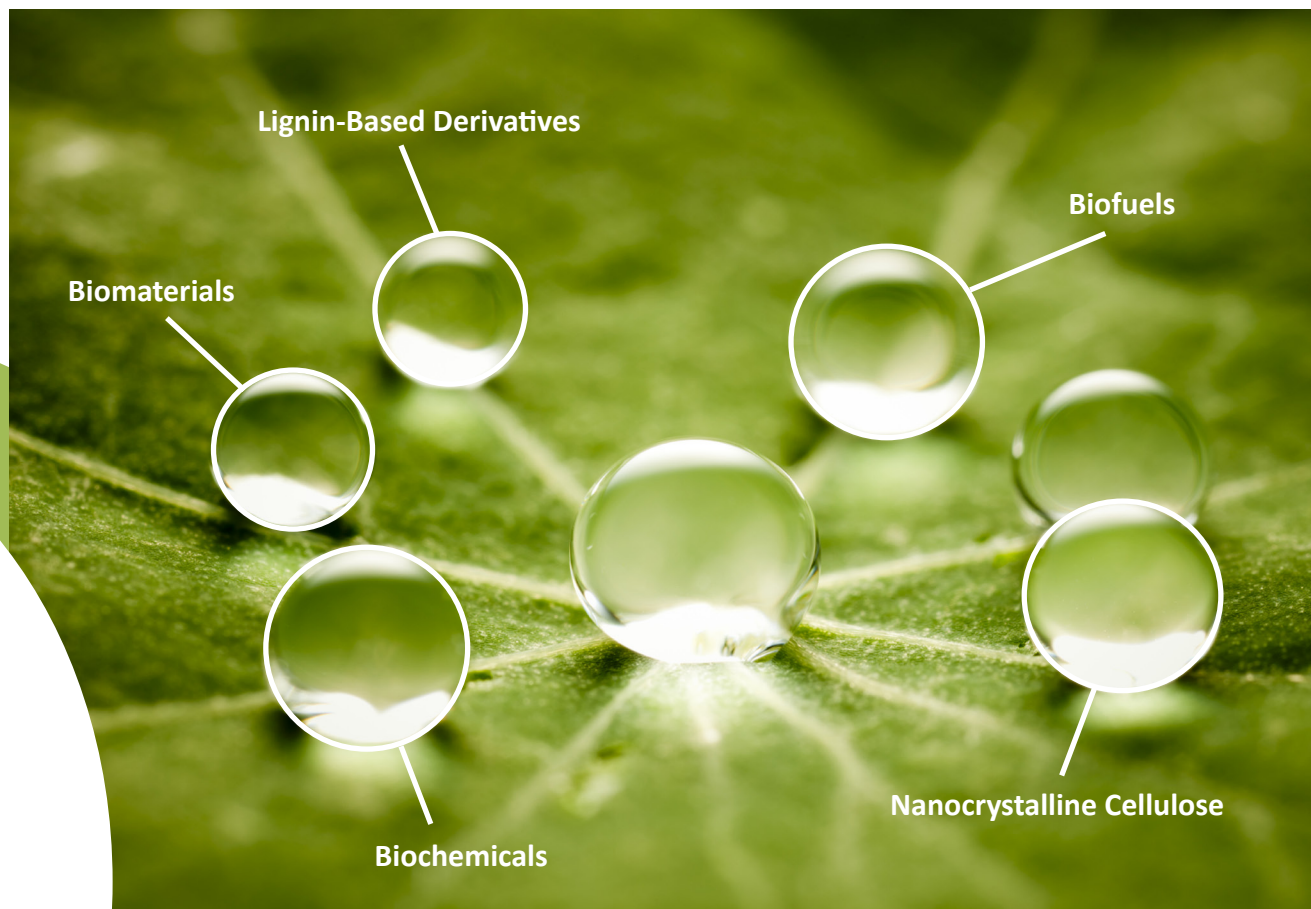


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FOR THE ADVANCEMENT OF THE FOREST INDUSTRY

FEATURING:

A special issue focused on Value Chain Optimization (VCO) with the collaboration of NSERC's VCO Network

- **Invited Review Papers:**

Information and knowledge sharing in the collaborative design of planning systems within the forest products industry: survey, framework and roadmap,
by R. Azouzi and S. D'Amours

Multi-agent system applications in the forest products industry,
by J.-M. Frayret



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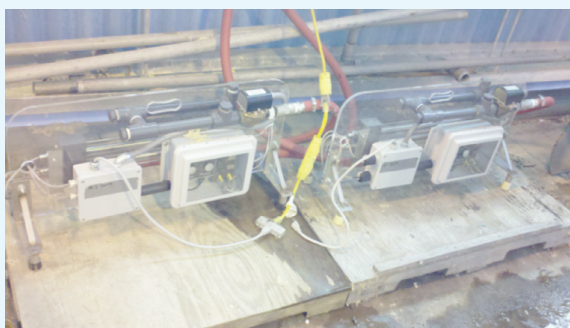
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- 71 Improvement of Cost Efficiency in Papermaking with Optimization Tools
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4 EDITORIAL

J-FOR has targeted “value chain optimization” as the theme for the second issue –what a great idea!
by Sophie D'Amours and Paul R. Stuart



Sophie D'Amours, PhD, Eng.



Paul R. Stuart, PhD, Eng.

5 PAPTAC NEWS UPDATE

- PAPTAC National Awards presented at PaperWeek Canada 2012
- Short, effective and timely Webinars organized by PAPTAC's Technical Communities
 - Energy: ISO 50001
 - Paper Machine Technology: Steam Showers
 - Environment: Water Initiatives

5 MILL CHAMPION'S PROFILE



Jenna Hazelton

Process Engineer
Irving Paper
Jenna Hazelton is a recent Dalhousie University and Nova Scotia Agricultural College graduate from Truro, Nova Scotia.

PUBLISHER:

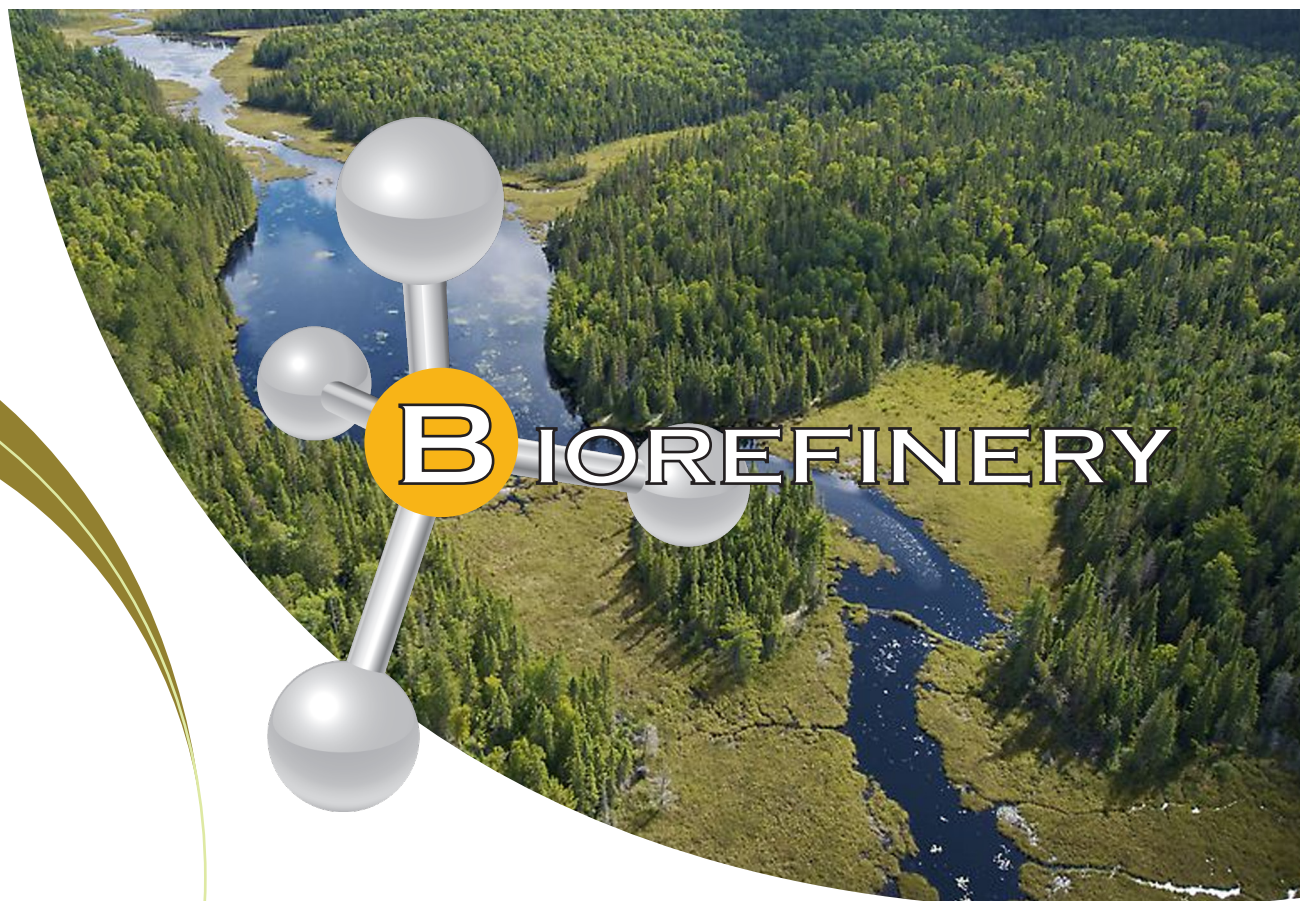


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FEATURING:

A special issue focused on PaperWeek Canada's International Forest Biorefinery Symposium, with invited editors Dr. Marzouk Benali, Senior Research Scientist, CanmetEnergy/NRCan and Dr. Tom Browne, Program Manager, FPInnovations

- Invited Review Paper:
New and Emerging Biorefinery Technologies and Products for the Canadian Forest Industry,
by M. Paleologou, T. Radiotis, L. Kouisni, N. Jemaa, T. Mahmood, T. Browne, and D. Singbeil, FPInnovations



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TECHNICAL PAPERS

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- 62 **Techno-Economic Analysis of Biorefinery Process Options for Mechanical Pulp Mills**
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- 71 **Energy Efficiency in Biorefineries — A Case Study of Fischer-Tropsch Diesel Production in Connection with a Pulp and Paper Mill**
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10 This GAP system was recently installed in a western Canadian Kraft pulp mill for the recovery of sulphuric acid from chlorine dioxide generator effluent.

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Marzouk Benali, Ph.D.



Tom Browne, ing., Ph.D.

4 A WORD FROM THE EDITOR-IN-CHIEF AND THE DEPUTY EDITOR

5 PAPTAC NEWS UPDATE

- PaperWeek Canada 2012 Recap
- PACWEST Conference
- Mill Managers Community meeting at PACWEST
- ISWFPC 2013
- TAPPI Nanotechnology Conference in collaboration with PAPTAC in Montréal, QC, Canada

5 MILL CHAMPION'S PROFILE



Pierre Slusarek
Surintendant Pulperie
RockTenn

Pierre is a Chemical Engineering graduate, and earned a Masters degree in pulp and paper, from McGill University (Montreal).

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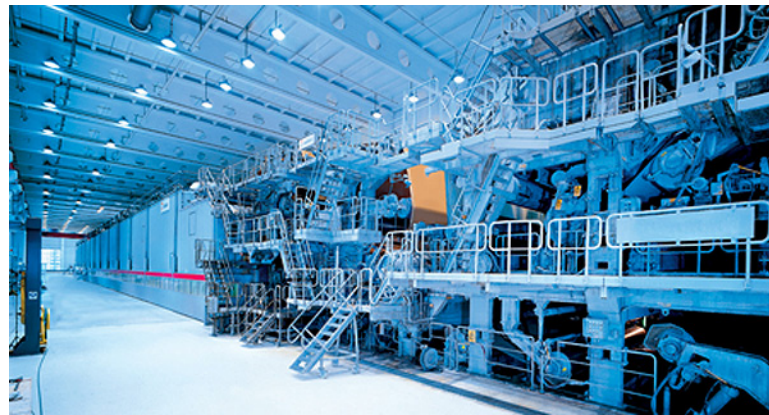


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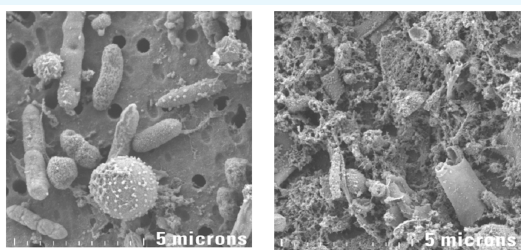
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FEATURING:

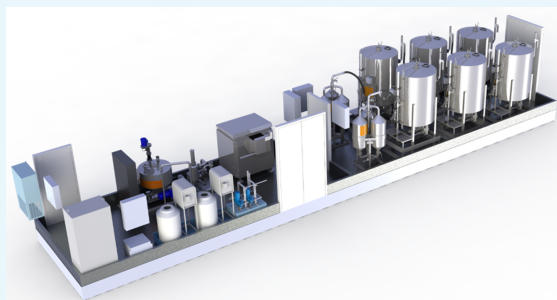
- **Invited Review Paper:**
Process integration methodologies developed and applied in Swedish kraft pulp mills - A review, by M. Mahmoudkhani and T. Berntsson
- **Award-Winning Papers:**
Howard Rapson (bleaching)
Douglas Attack (mechanical pulping)
& Douglas Jones (environmental)

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- 6 **Process Integration Methodologies Developed and Applied in Swedish Kraft Pulp Mills—A Review**
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Hongui Tran, PhD, P. Eng.



Paul R. Stuart, PhD, Eng.

A Word from the PAPTAC Executive Director



Greg M. Hay
Executive Director,
PAPTAC

5 PAPTAC NEWS UPDATE

- PAPTAC Supports FPAC's Vision 2020 - Canada's Natural Advantage
- UBC to Lead PWC Future Workforce Program
- Update on the PAPTAC 2012 Executive Council
- New Leadership of the Process Control Community

5 MILL CHAMPION'S PROFILE



Ralph Lunn

Senior Process Engineer
Zellstoff Celgar Limited Partnership
Ralph is a Mechanical Engineering graduate who started his career at Crestbrook Forest industries in Skookumchuck B.C. (now Tembec) as a Project Engineer.

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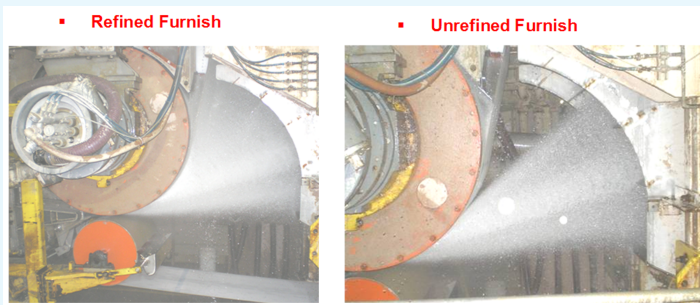
- Spotlight on the Canadian FIBRE Network Initiative
- A wide range of papers from bleaching, co-generation and chemical recovery to sludge characterization and paper machine

TECHNICAL PAPERS

- 6 **Ultrasound-assisted Hydrogen Peroxide Bleaching of a Softwood Thermomechanical Pulp**
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- 19 **The Use of Paper Mill Biotreatment Residue as Furnish or as a Bonding Agent in the Manufacture of Fibre-based Boards**
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- 25 **Development of Pilot Tissue Machine at FPInnovations**
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- 32 **Benchmarking Paper Machine Influence on Linting and Piling**
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- 40 **Adding a Biomass-fired Cogeneration Power Plant to a Natural Gas Processing Plant**
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Greg M. Hay
PAPTAC Executive Director

A Word from the Editor-in-Chief



Honghi Tran, PhD, P. Eng.,
Editor-in-Chief

5 PAPTAC NEWS UPDATE

- 24th ISO/TC6, SC2 and SC5 Plenary and Working Group Meetings will be hosted by Canada
- Nanotechnology Leaders Met in Montreal
- A Successful 2012 PACWEST Conference
- PAPTAC Launches New Microsites and On-line Forums for Technical Communities

5 MILL CHAMPION'S PROFILE



Steve Goldstein

Production Supervisor
Norampac - Mississauga

With over 30 years of experience in the industry, Steve completed studies at York University in Toronto Computer Science in 1982.

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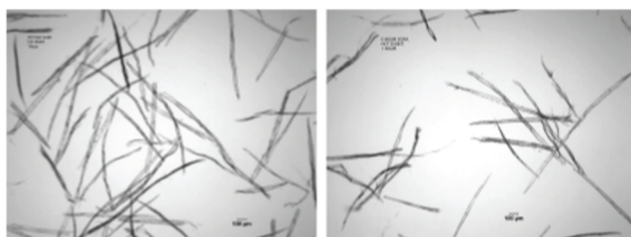
- Special focus on pulping and papermaking
- Editorial:
The North American pulp and paper industry – a look forward

TECHNICAL PAPERS

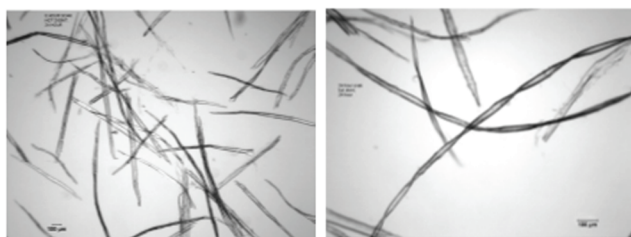
- 6 **Evaluation of Collimated Chipping Technology for Reducing Energy Consumption in Mechanical Pulping**
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- 10 **Optimization of Selective Refining of Sulphonated Long Fibres from Jack Pine: Fibre Characteristics**
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A



B



C

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Ivan Pikulik
Consultant

A Word from the Editor-in-Chief



Honghi Tran, PhD, P. Eng.,
Editor-in-Chief

5 PAPTAC NEWS UPDATE

- Industry CEOs to kickoff each day at PaperWeek Canada 2013
- PAPTAC Launches Business Awards to Recognize Leadership Excellence
- New Leadership for the Maintenance Community
- Engineering Data Sheet Update
- Bleaching Community Spring Meeting Recap

5 MILL CHAMPION'S PROFILE



Sylvie Gagné

Process Engineer and Wastewater Treatment Plant Supervisor
New Forest Paper Mills LP

Sylvie Gagné is a graduate from the University of Ottawa, earning a degree in Chemical Engineering-Biotechnology in 1993 and a Masters of Applied Science in Chemical Engineering in 1996.

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BIOREFINERY



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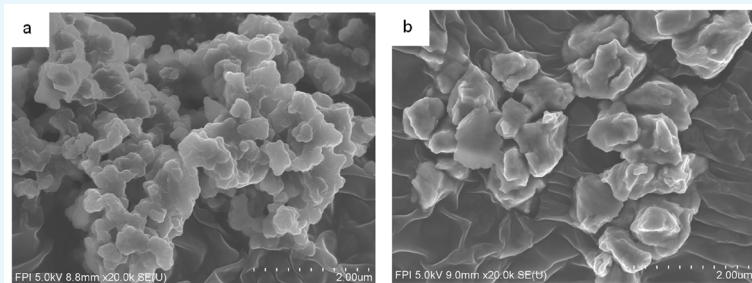
FEATURING:

- A special biorefinery issue devoted to the 3rd edition of PaperWeek Canada's International Forest Biorefinery Symposium, with editorial from guest editor and Symposium Chair, Dr. Mariya Marinova of École Polytechnique de Montréal

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- 60 Value-Chain Planning in the Forest Biorefinery: Case Study Analyzing Manufacturing Flexibility**
by Louis Patrick Dansereau, Mahmoud El-Halwagi, Paul Stuart



- 8 SEM images of lignin in lignin slurry obtained from: a) unoxidized and b) oxidized black liquor solution after acidification to pH 10 using carbon dioxide.**

4 EDITORIAL

Recent developments in forest biorefinery!



Mariya Marinova
Chair of the 3rd IFBS

A Word from the Deputy Editor



Paul Stuart, PhD, P. Eng.,
Deputy Editor

5 PAPTAC NEWS UPDATE

- ISWFPC Pre-Symposium on NCC shaping up for an excellent program!
- Major p&p producing countries meet in Canada for the 24th Meeting of the ISO TC6 (Paper, Board and Pulp) hosted by FPInnovations
- Standard Methods Update
- Paperboard Packaging Community meeting recap
- Past conference preprints & proceedings
Free for members

5 MILL CHAMPION'S PROFILE



Serena Sanford

Process Engineering Specialist
AV Nackawic

Serena Sanford is a recent University of New Brunswick graduate from Oromocto, New Brunswick.

PUBLISHER:



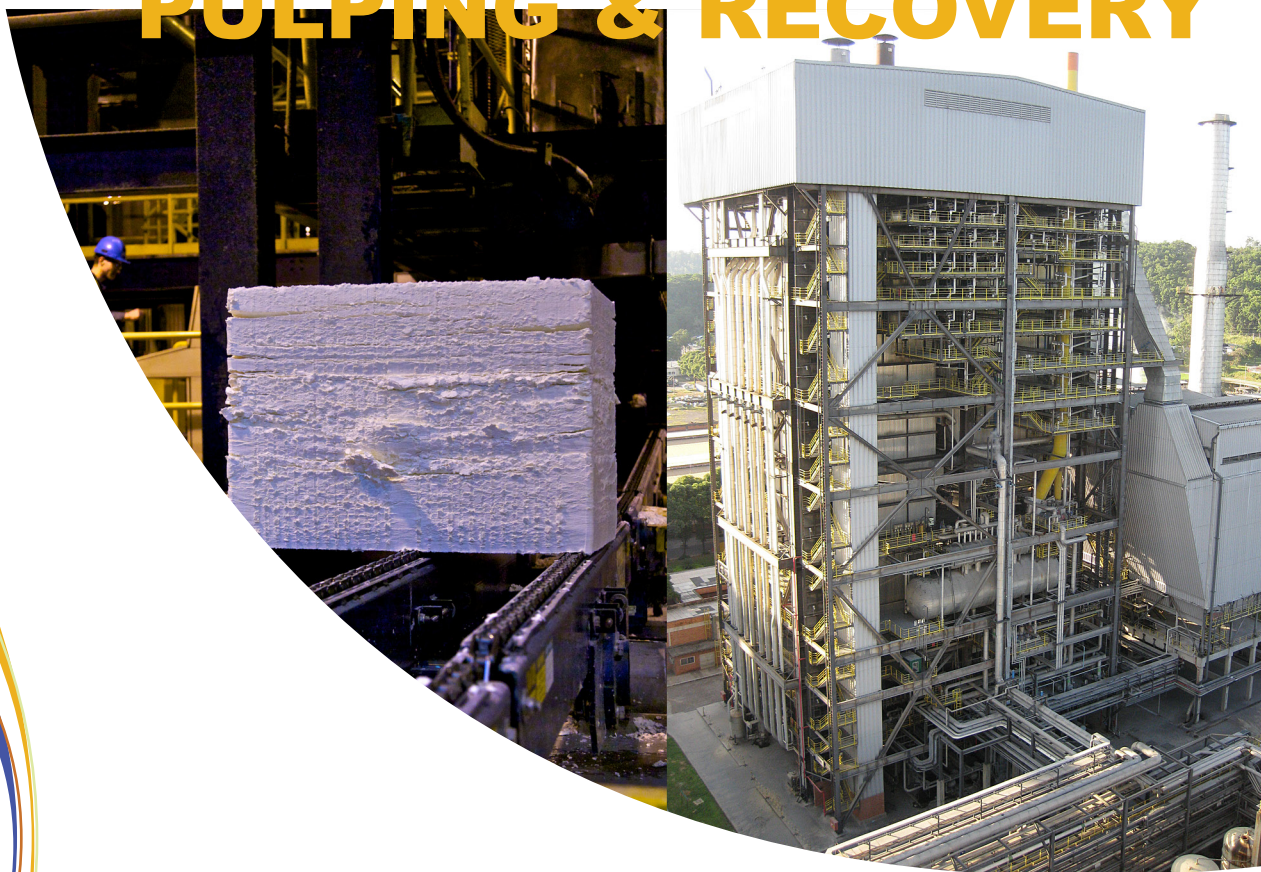
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PULPING & RECOVERY



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FEATURING:

- Special focus on pulping processes and recovery
- Editorial on the main challenges & opportunities in recovery in modern kraft pulp mills by Honghi Tran, University of Toronto

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4 EDITORIAL

Challenges & opportunities in black liquor recovery in modern kraft pulp mills



Honghi Tran, PhD, P. Eng.,
Editor-in-Chief

5 PAPTAC NEWS UPDATE

- Look out for the PaperWeek Canada 2013 review
- New publications available in the PAPTAC bookstore
- Atlantic Branch Conference
- PAPTAC Biorefinery Course

5 MILL CHAMPION'S PROFILE



Holt Quinn

Process Control Engineer
at Alberta Newsprint Company

Holt Quinn is a graduate from the University of Idaho, earning a B.S. degree in 1981 and an M.S. degree in 2006, both in Chemical Engineering.

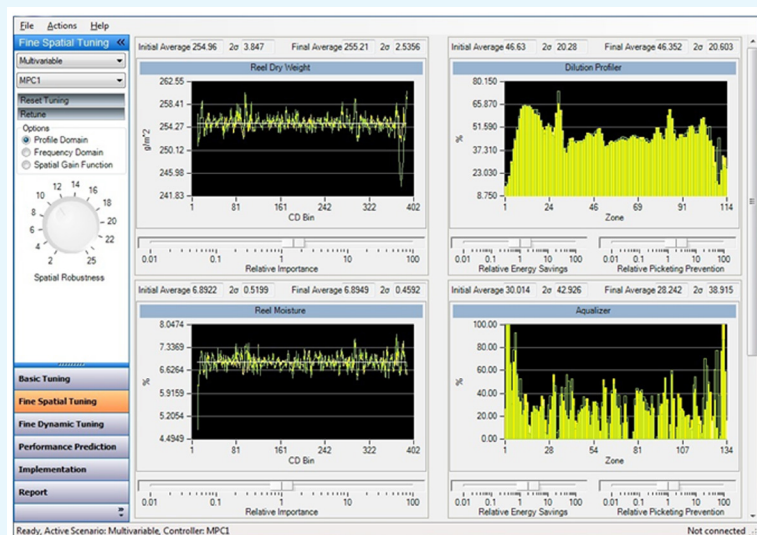
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36 Multivariable CD-MPC tuning and steady-state performance predictions.

NANOTECHNOLOGY



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FEATURING:

- Special issue on nanotechnology with selected articles from the 2012 TAPPI Int'l Conference on Nanotechnology for Renewable Materials, Montreal, QC, Canada
- Editorial by Conference Co-Chairman, Dr. Patrice Mangin, UQTR/CRML

TECHNICAL PAPERS

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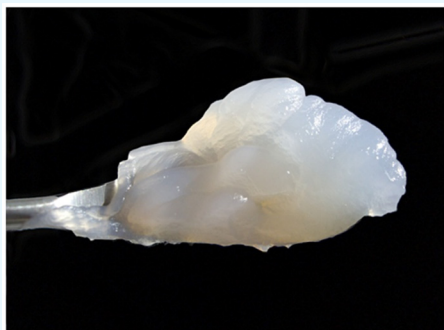
- 6 **Potential of Nanocellulose as a Reinforcing Phase for Polymers**
by Alain Dufresne

- 17 **Preparation of Polycarbonate Nanofibres Containing Nanocrystalline Cellulose**
by Andrew C. Finkle, Leonardo C. Simon

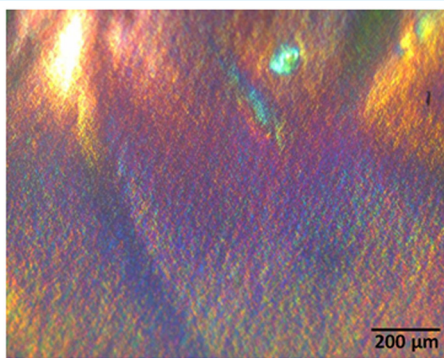
- 24 **Mechanical and Barrier Properties of Methylcellulose-based Films Grafted with Trimethylolpropane Trimethacrylate by Gamma Radiation: Effect of Filling with Cellulose Nanocrystals**
by Nusrat Sharmin, Ruhul Khan, Stephane Salmieri, Dominic Dussault, Jean Bouchard, Monique Lacroix

- 32 **Effect of Particle Alignment on Mechanical Properties of Neat Cellulose Nanocrystal Films**
by Alexander B. Reising, Robert J. Moon, Jeffrey P. Youngblood

- 42 **The Potential Use of Micro- and Nano-fibrillated Cellulose as a Reinforcing Element in Paper**
by Isko Kajanto, Mika Kosonen



- 7 **Photograph of a 2 wt% microfibrillated cellulose aqueous suspension from eucalyptus after enzymatic pre-treatment [12].**



- 37 **Optical micrographs of dried CNC sheared film (100 s-1), taken in transmission mode through crossed polarizers. The cross-hatch pattern observed indicates the presence of a "birefringent glassy" phase of CNCs dominated by surface charge repulsion between crystals.**

4 EDITORIAL

A look at today's nanotechnology advancement and industry implementation



Patrice J. Mangin, Ph.D., Ing. INPG
Professor, Département de Génie Chimique
Centre de recherche sur les matériaux lignocellulosiques (CRML)
Université du Québec à Trois-Rivières

5 PAPTAC NEWS UPDATE

- FIBRE Meeting Review
- Marcus Wallenberg Prize comes to Canada
- Atlantic Branch Conference Recap
- New Leadership of the PMTC
- New Leadership of the Mechanical Pulping Community
- Standards Methods Update

5 MILL CHAMPION'S PROFILE



Justin Charron

Process Engineer
at J.D. Irving, Limited

Justin Charron is a graduate of the University of New Brunswick, earning a Bachelor's degree in Chemical Engineering, and a Diploma in Technology Management & Entrepreneurship in 2010.

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J-FOR

A PAPTAC JOURNAL

JOURNAL OF SCIENCE & TECHNOLOGY FOR FOREST PRODUCTS AND PROCESSES

VOL. 3, NO. 1, 2013

FEATURING

- A blend of articles dealing with traditional and emerging fields, from Pulping to Nanotechnology
- A special section on the review of the inaugural Canadian FIBRE Network Conference



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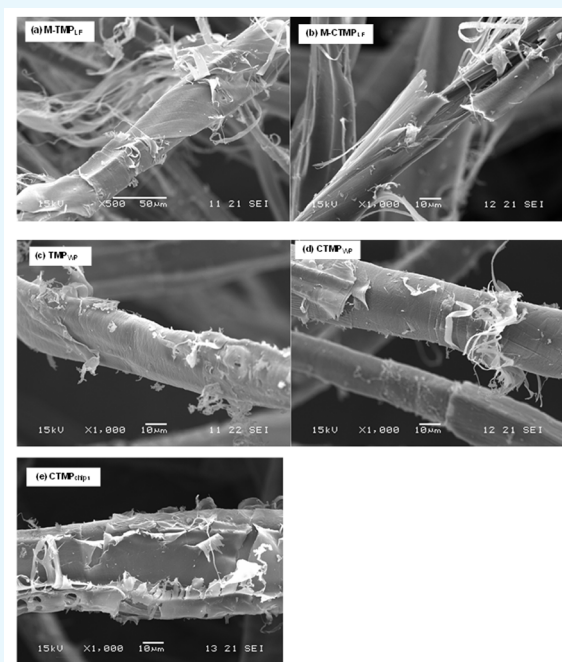
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29 SEM images showing surface morphology of fibres from selective refining and whole-pulp refining. The samples were from fraction R28 collected by BMN.

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Theo van de Ven,
Chair, FIBRE

The inaugural FIBRE Network Conference - an outstanding success!



Paul R. Stuart,
Deputy Editor

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5 MILL CHAMPION'S PROFILE



Richard Gravel

Surintendant Finition/ Expédition
Division des papiers publications
Kruger

Richard Gravel began his career in the pulp and paper industry at Abitibi-Price Div Beupré in 1982 as a relief staff.

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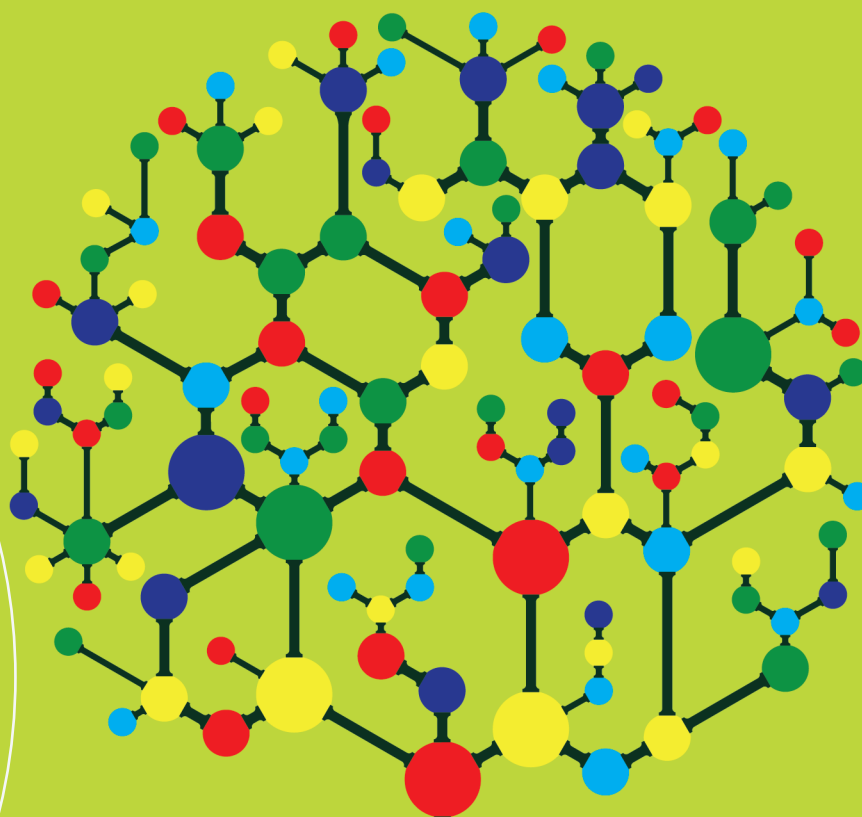
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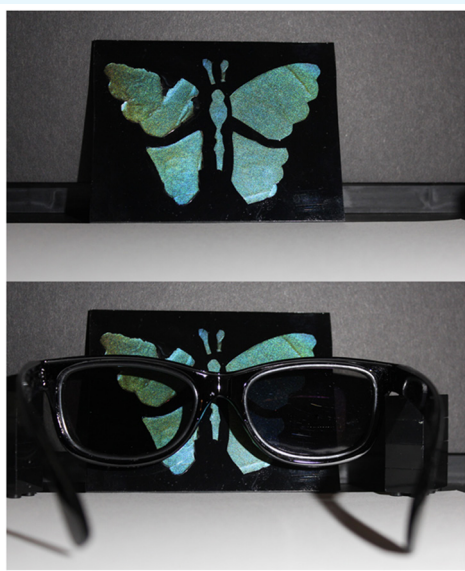
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7 (upper) Butterfly image made from blue CNC film.
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Dr Sylvain Robert
UQTR

**A Great tradition
that continues on and on**

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Ian MacEachen

Manager - Technical Services,
Continuous Improvement and Environment
Krugier inc., Krupack Packaging

Ian MacEachen is a graduate of McGill, earning
a degree in Chemical Engineering in 1983.

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FEATURING

- Featuring a special section with selected papers from the 2013 Intl Black Liquor Colloquium
- An editorial by Dr. Reyhaneh Shenassa, Valmet, Technical Co-Chair – 8th Intl BL Colloquium & Guest Editor



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Special Issue on Black Liquor Recovery

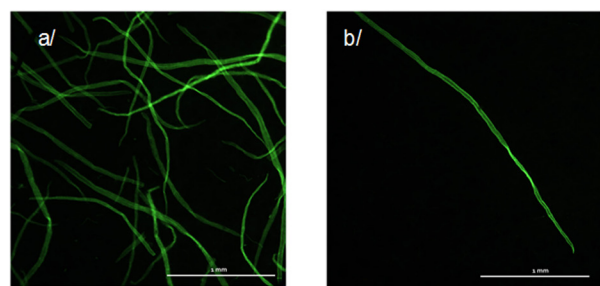
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Reyhaneh Shenassa,
Valmet
Guest Editor



Jorge Colodette,
Federal University of Vicosa
Co-Editor

Highlighting Recent Advancements in Black Liquor

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- Daniel Archambault re-elected as Chairman of PAPTAC for 2014
- New proceedings available at the PAPTAC bookstore
- PAPTAC Awards 2014

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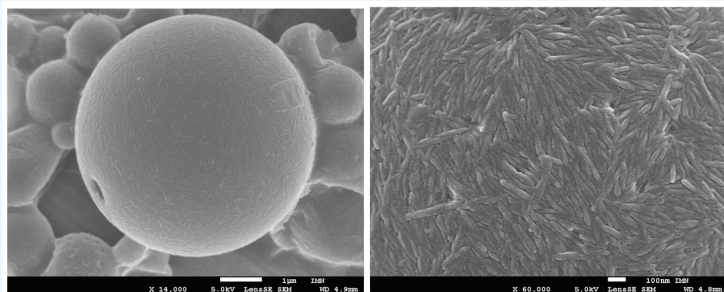
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- Selected papers from the 2013 Int'l Symposium on Wood, Fibre and Pulping Chemistry
- Editorial: Sobering thoughts on industry transformation

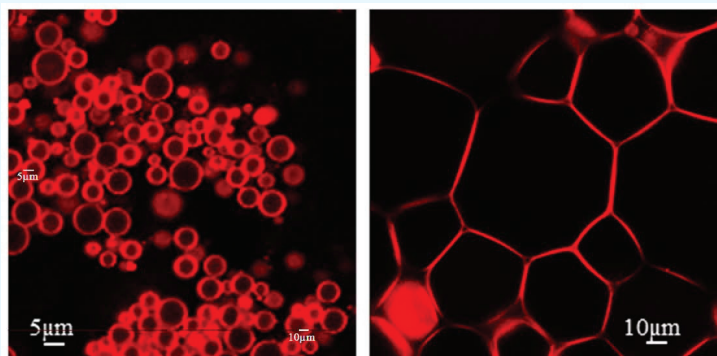
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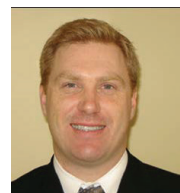


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- 37 CLSM images of an emulsion with 20% internal phase (left) and over 75% internal phase (right).**

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Greg Hay
PAPTAC
Executive Director

Sobering thoughts on transformation

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- Review of the Atlantic Branch Annual Conference
- PAPTAC launches Student Community
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- You can now follow PAPTAC on Twitter

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Andre D. Murphy

Manager, Maintenance & Engineering
Tolko Industries, Kraft Papers Division

With more than 25 years of experience in the kraft paper industry, Andre Murphy remains focused on driving achievement and success in maintenance reliability and increased paper production...

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BIOREFINERY



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FEATURING

- Selected articles from the 2014 International Forest Biorefinery Symposium at PaperWeek Canada
- An editorial by Guest Editor, Dr. Mariya Marinova, École Polytechnique de Montréal, Symposium Chair

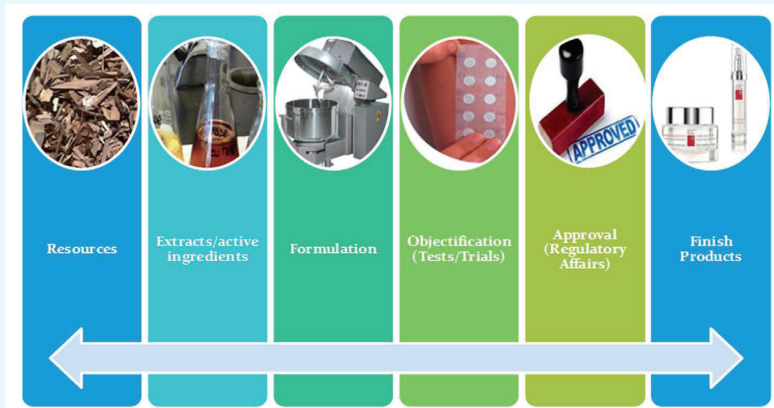
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- 35 Value chain of natural extracts [45].**

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Biorefinery in the spotlight at J-FOR

Mariya Marinova
Guest Editor
École Polytechnique de Montréal

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- ECBLRBAC Fall Meeting - Preliminary Agenda Announced
- PaperWeek Canada 2015 Call for Papers

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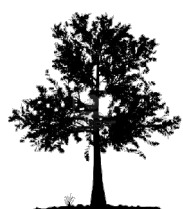


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Process

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- An editorial by Dr. Honghi Tran, outgoing Editor-in-Chief of J-FOR
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30 Paper produced at the industrial plant of Papeles Bío Bío S.A.

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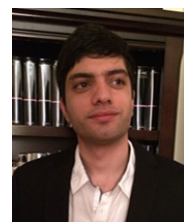
Honghi Tran
Editor-In Chief
University of Toronto

J-FOR's pursuit of excellence through strong leadership

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- PMTC to Host Paper Machine Efficiency Seminar at PaperWeek 2015
- Finishing/Shipping/Warehousing Meeting in Quebec City
- Éric Gingras takes on Chairmanship of the Energy Community

5 MILL CHAMPION'S PROFILE



Mehdi Afrousheh

Process Engineer,
Lake Utopia Paper

Mehdi Afrousheh achieved his Bachelor of Science from Polytechnic University of Tehran in Chemical Engineering in 2010.

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COVER STORY

**Health & Safety Program - Managing risk
with Eric Ashby from Domtar**

FEATURING

- Bio-products are hatching, (although tentatively)
- Power & Energy
- Mill Optimization

- Editorials by Dr. Paul Stuart, J-FOR's incoming Chief Scientific Editor and Greg Hay, J-FOR's publisher

J-FOR TECHNICAL PAPERS

- Peer-reviewed articles focused on mill optimization and emerging trends

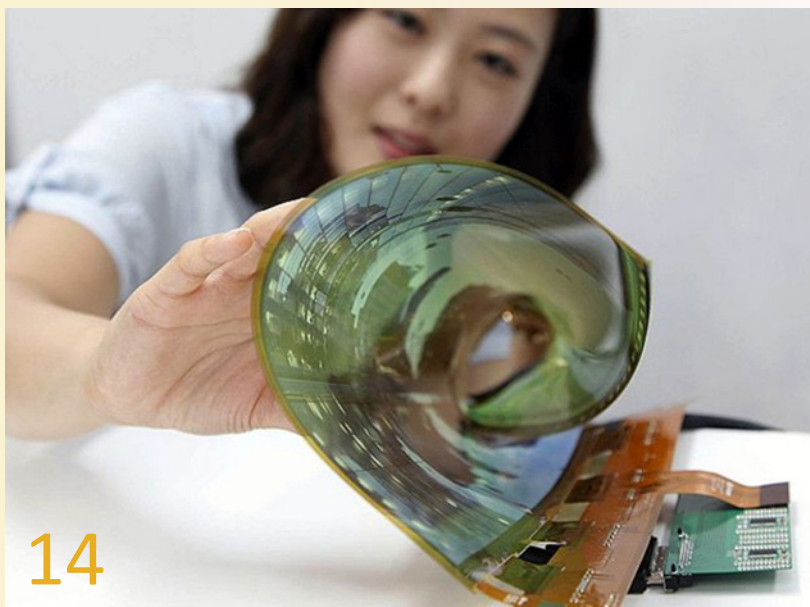
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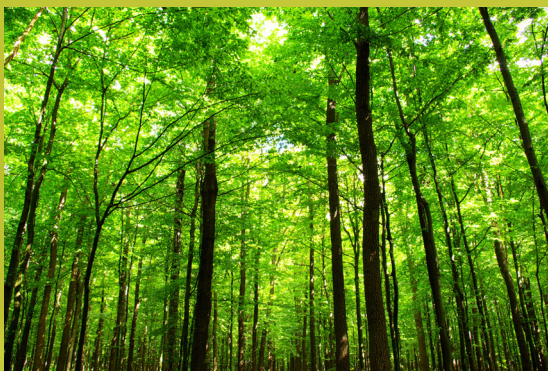
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Biorefinery



FEATURING:

- A 2nd series of selected articles from the 2014 International Forest Biorefinery Symposium at PaperWeek Canada
- A special editorial by Guest Editor, Dr. Mariya Marinova, École Polytechnique de Montréal, Symposium Chair

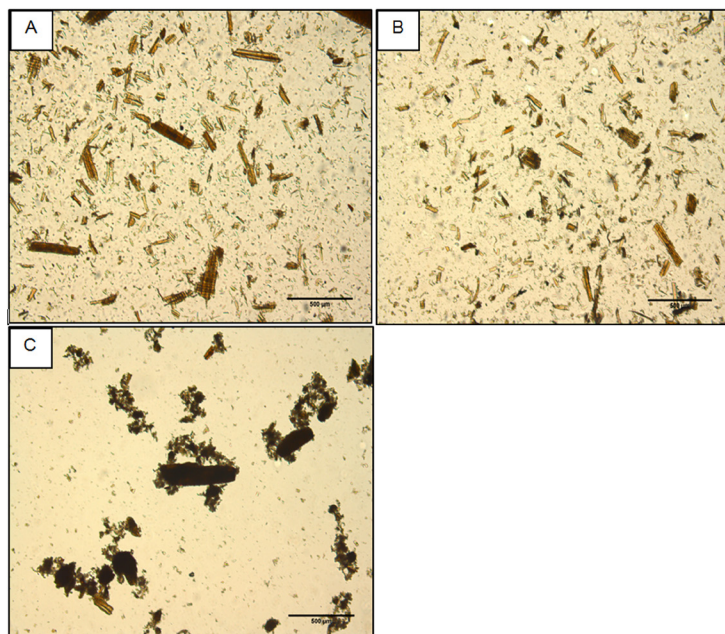


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Mariya Marinova
Guest Editor
École Polytechnique de Montréal

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- PAPTAC Launched J-FOR+

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15 Light microscopy images of a) DA, b) CM-ARA, and c) CM-AAR pre-treated spruce.

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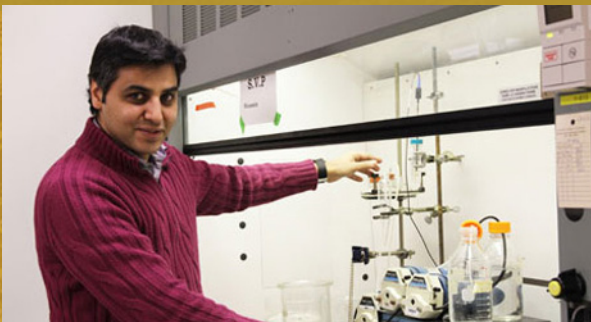
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Technical & Scientific Papers



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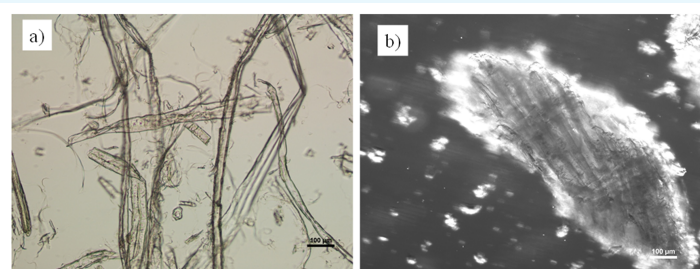
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Patrice Mangin
Deputy Scientific Editor

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diversified industry**

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- Rock Step Banquet
- Joint Meeting of the Executive Council and Community Chairmen
- PaperWeek 2015 Proceedings

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PaperWeek Canada 2015 Highlights

- **The Strategy for Canadian Industry Alignment**
Executive panel confirms industry on track for transformation
- **5th Edition of the International Forest Biorefinery Summit at PaperWeek 2015**
- **Commercialization Forum: Fibre Innovation for Sale**
And more...



- **Megatrends in the pulp and paper industry**
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- **Special issue on Recovery Boiler optimization with selected papers from the 2014 Int'l Chemical Recovery Conference**
- **A special editorial by Esa Vakkilainen, Lappeenranta University of Technology, on 80 years of kraft recovery boilers celebrated at ICRC**



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Coverage highlights of the 2015 FIBRE Network Conference



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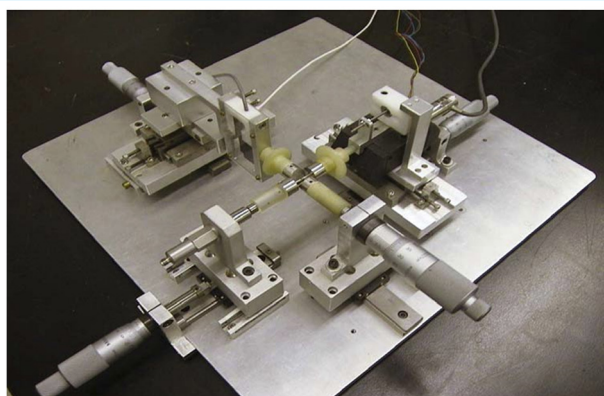
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Cristina Murciano
Development Lead
PAPTAC

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- Otto Maas Students Posters Awards
- Funding Confirmed! Five more Years?
- On Your Marks, Get Set, Go!
- Conclusions on the Innovation Framework break-out meetings

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Chemical Recovery Special



FEATURING:

- *Recovery boiler and evaporator optimization*
- *A 2nd special issue with selected papers from 2014 International Chemical Recovery Conference*
- *An editorial spotlight on the Energy & Chemical Recovery Program at the University of Toronto led by Dr. Honghi Tran*

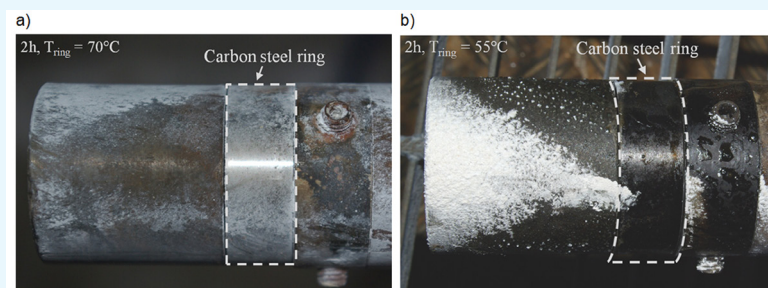


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VOL. 5, NO.1



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- A budding age of Canadian superfibres

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Associate Editor of J-FOR*

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*Professor and Canada Research Chair
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- PaperWeek Executive Panel Discusses Bio-product Commercialization
- J-FOR's Technical Papers with its unique blend of traditional and emerging topics

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2016

SPECIAL REVIEW of PAPTAC CONFERENCES



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FEATURING:

- *An editorial by J-FOR's lead associate editor, Patrice Mangin, on the 3 success keys behind the La Tuque renewable fuel refinery project*
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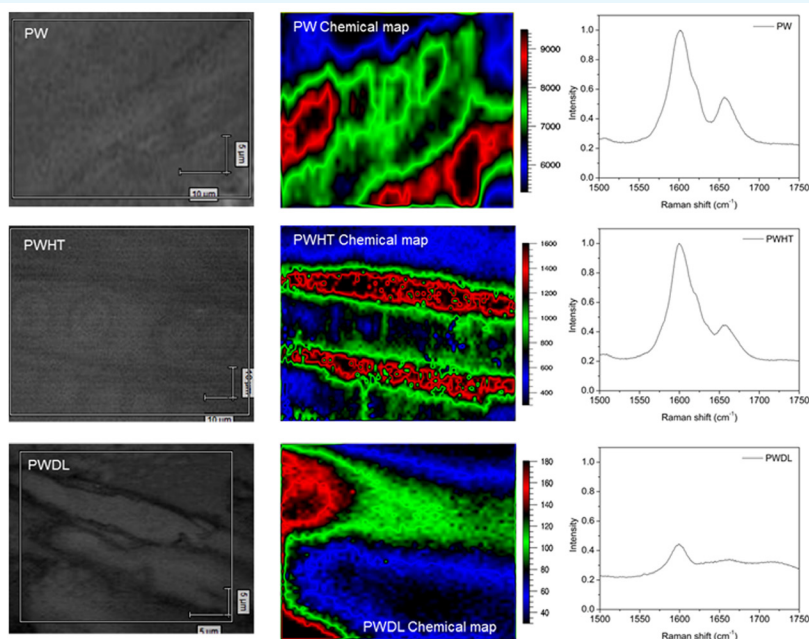


**The 3 success keys
for the renewable
fuel La Tuque
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Patrice J. Mangin
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La Tuque and bioeconomy/
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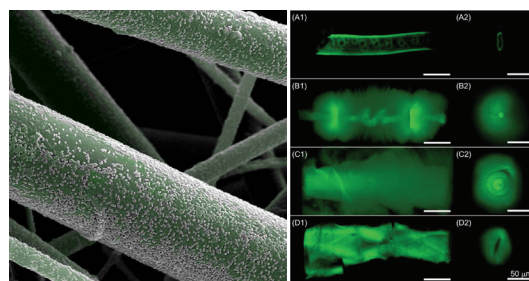
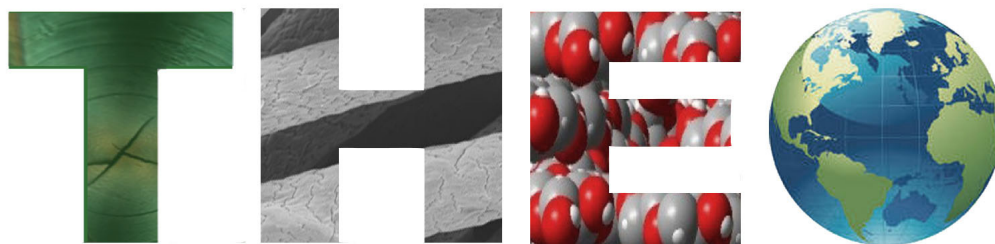
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A dedicated issue on the work of Theo van de Ven

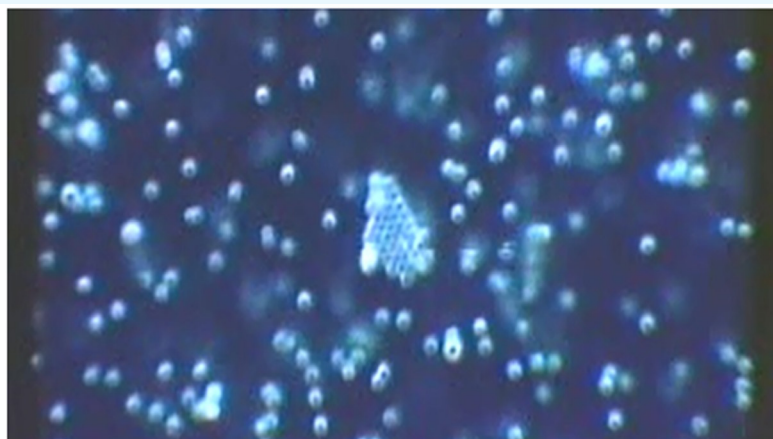


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VP, R&D and Innovation
TGWT Clean Technologies Inc.

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FOR THE ADVANCEMENT OF THE FOREST INDUSTRY



VALUE CHAIN OPTIMIZATION



FEATURING:

- *A special issue on Value Chain Optimization in the Forest Bioeconomy, and a selection of papers contributing to the emerging field of forest bioeconomy transformation and value chain optimization*

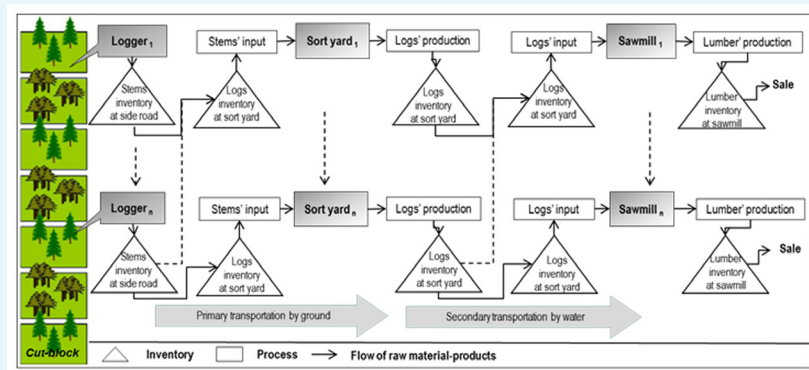


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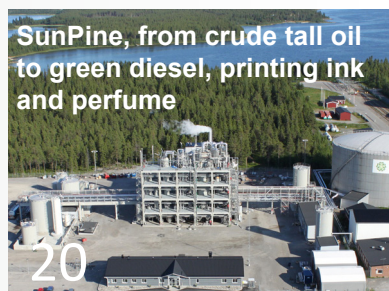
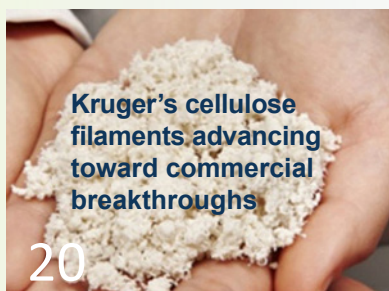
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VOL. 6, NO. 2

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"Recognizing the Forest Fibre's Value"

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A PAPTAC JOURNAL



VOL. 6, NO. 3

JOURNAL OF SCIENCE & TECHNOLOGY FOR FOREST PRODUCTS AND PROCESSES

FOR THE ADVANCEMENT OF THE FOREST INDUSTRY

**J-FOR's unique blend of traditional and emerging papers dealing
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FEATURING:

From pulp mill to bioproduct mill

*A column by Sören Back, freelance writer with
39 years' experience from pulp and paper industry*



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**From pulp mill
to bioproduct mill**

Sören Back

Freelance writer with 39 years' experience from pulp and paper industry

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February 5-8, 2018
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February 5-8, 2018
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FOR THE ADVANCEMENT OF THE FOREST INDUSTRY



- FEATURING:**
- J-FOR's unique blend of traditional and emerging papers dealing with Forest Products Science & Technology
 - Trials and errors in the paper industry
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Martin Fairbank
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J-FOR Lead
Associate Editor

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- Justin Charron, Irving Paper, to head PAPTAC's Papermaking Technology Community
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FEATURING

- Reality maintenance is coming: Augmented reality that is
- International project lead by VTT will speed up the development of fibre-based products
- J-FOR's technical peer-reviewed papers

February 5-8, 2018
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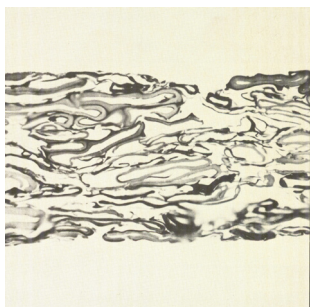
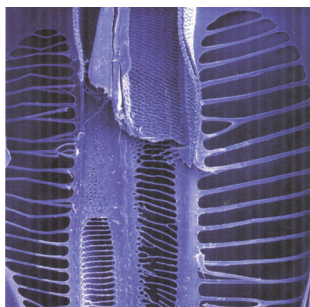
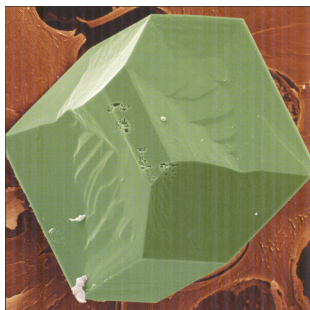
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A special issue on Derek Page's work and legacy in the pulp and paper industry

FEATURING:

- In Memoriam of Derek Page
An Editorial by David McDonald, President - JDMcD Consulting Inc.
- Derek Page and the Journal of Pulp and Paper Science
A Preface by Richard J. Kerekes, University of British Columbia

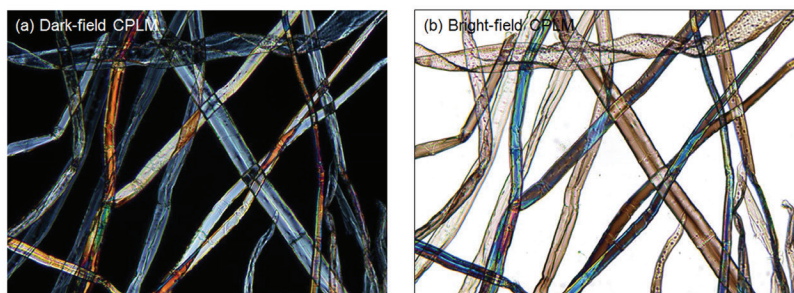


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The micro-photographs on the front cover are from past issues of JPPS.

From top to bottom:

1. Crystal in radial section of Kwila (*Intsia spp.*) wood.
2. Radial section of birch wood showing scalariform vessel perforation plates.
3. Cross-section of early- and latewood TMP fibres.
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4 EDITORIAL



David McDonald
Guest Editor
Derek Page J-FOR Issue

**A Special J-FOR
in memoriam Issue
dedicated to the work
and legacy of Derek Page**

5 PREFACE



Richard J. Kerekes
Professor Emeritus
University of British Columbia

**Derek Page and the
Journal of Pulp and Paper Science**

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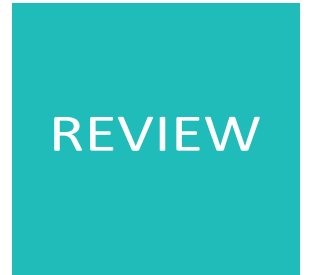
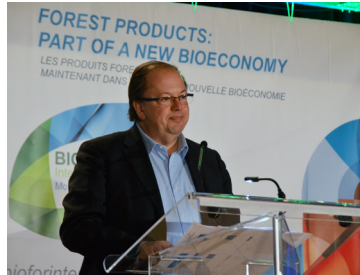
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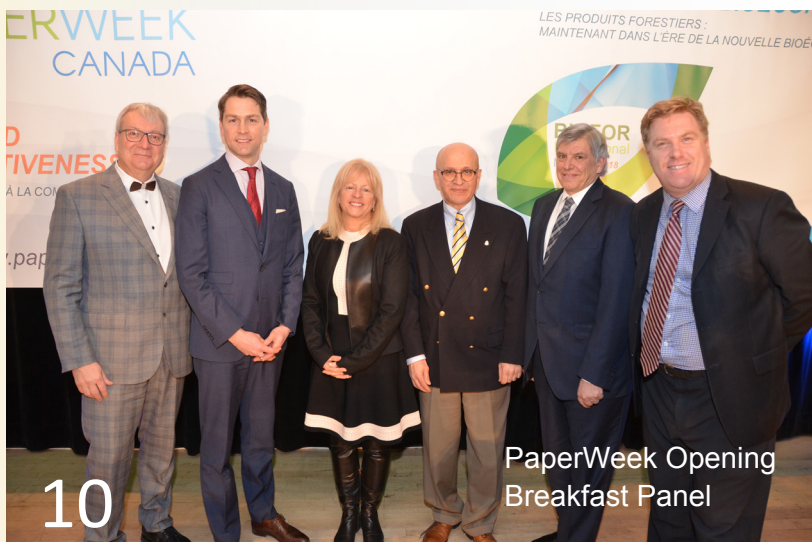
2018
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FEATURING

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FOR THE ADVANCEMENT OF THE FOREST INDUSTRY

Special issue on ICRC 2017

International Chemical Recovery Conference



FEATURING:

- A special issue with selected papers from 2017 International Chemical Recovery Conference
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Special issue on the 2017 International Chemical Recovery Conference held in Halifax, Canada, May 24 - 26, 2017



Allan Walsh
Conference Chair
J-FOR Guest Editor



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VOL. 7, NO. 3

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FOR THE ADVANCEMENT OF THE FOREST INDUSTRY

2nd Special ICRC Issue ICRC 2017

International Chemical Recovery Conference



FEATURING:

- A 2nd Special ICRC issue with selected papers from 2017 International Chemical Recovery Conference
- Editorial from Nikolai DeMartini, Professor, University of Toronto, J-FOR 2nd Special ICRC issue Guest Editor



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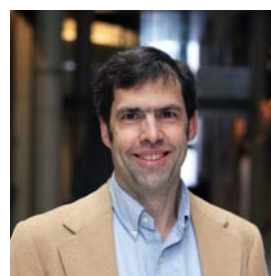
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2nd Special issue on the 2017 International Chemical Recovery Conference held in Halifax, Canada, May 24 - 26, 2017



Nikolai DeMartini
J-FOR Guest Editor

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EMERGING AREA



FEATURING:

- A blend of articles dedicated to emerging area, including two articles about cellulose nanocrystals.
- An editorial by Richard Berry, Vice-President, Technology and CTO, CelluForce.



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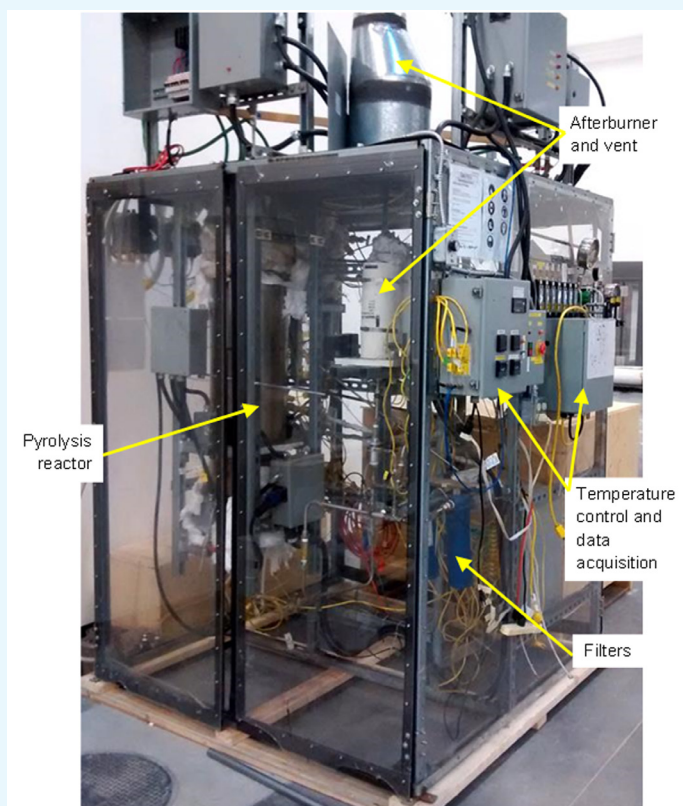
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Richard Berry
J-FOR Guest Editor
Vice-President, Technology and CTO
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33 Bench-scale pyrolysis system with surrounding fume cupboard.

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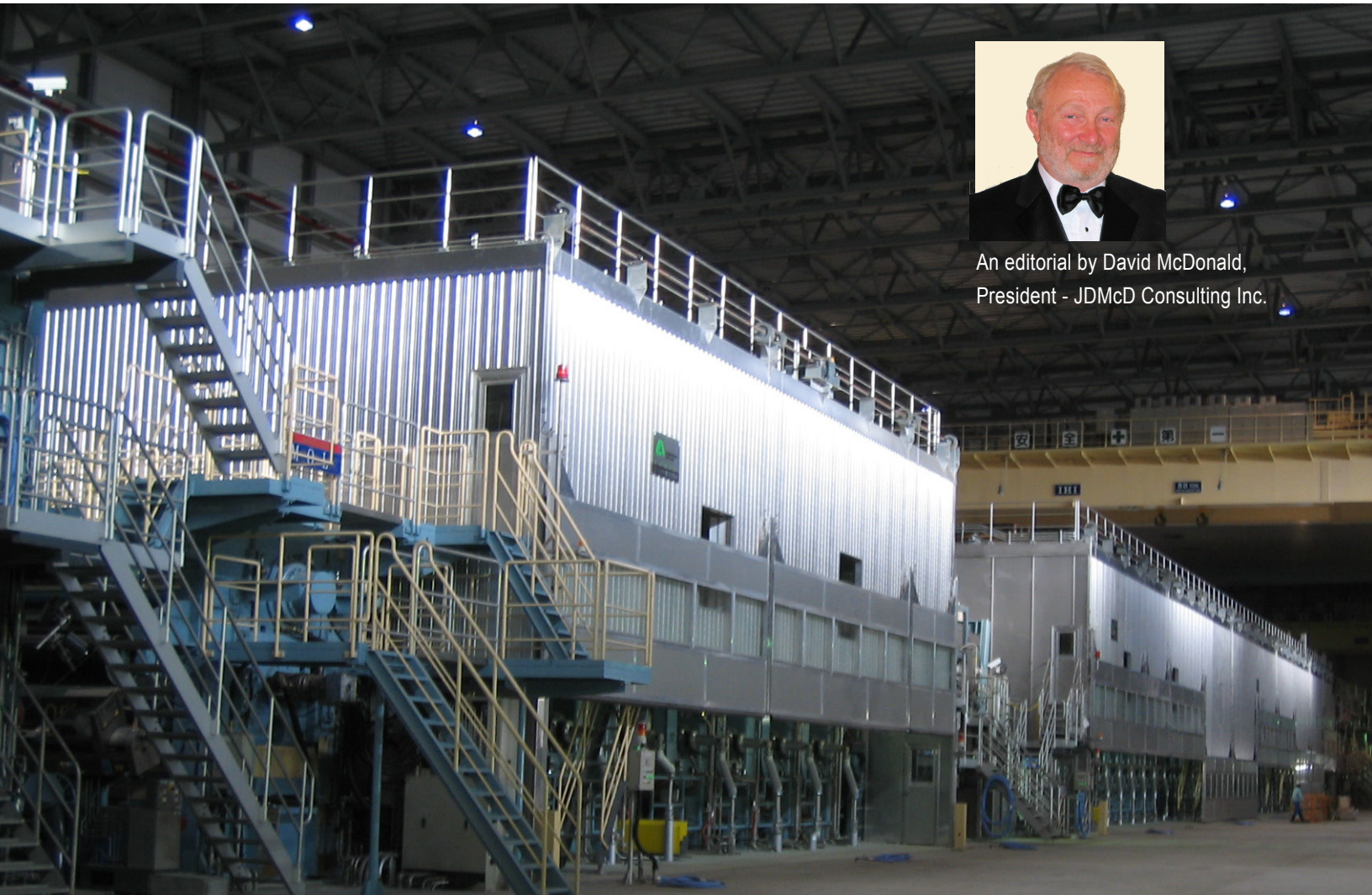


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An editorial by David McDonald,
President - JDMcD Consulting Inc.

FEATURING:

- A blend of articles dedicated to traditional area.
- An editorial by David McDonald, President - JDMcD Consulting Inc. Adjunct Professor, Chemical Engineering, McMaster University.



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David McDonald
President - JDMcD Consulting Inc.
Adjunct Professor, Chemical Engineering, McMaster University
J-FOR Guest Editor



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FEATURING:

- A blend of articles dedicated to traditional & emerging area, including two articles from the 1st International Lignin Conference.
- An editorial by Martin Fairbank, Consultant, J-FOR Lead Associate Editor.



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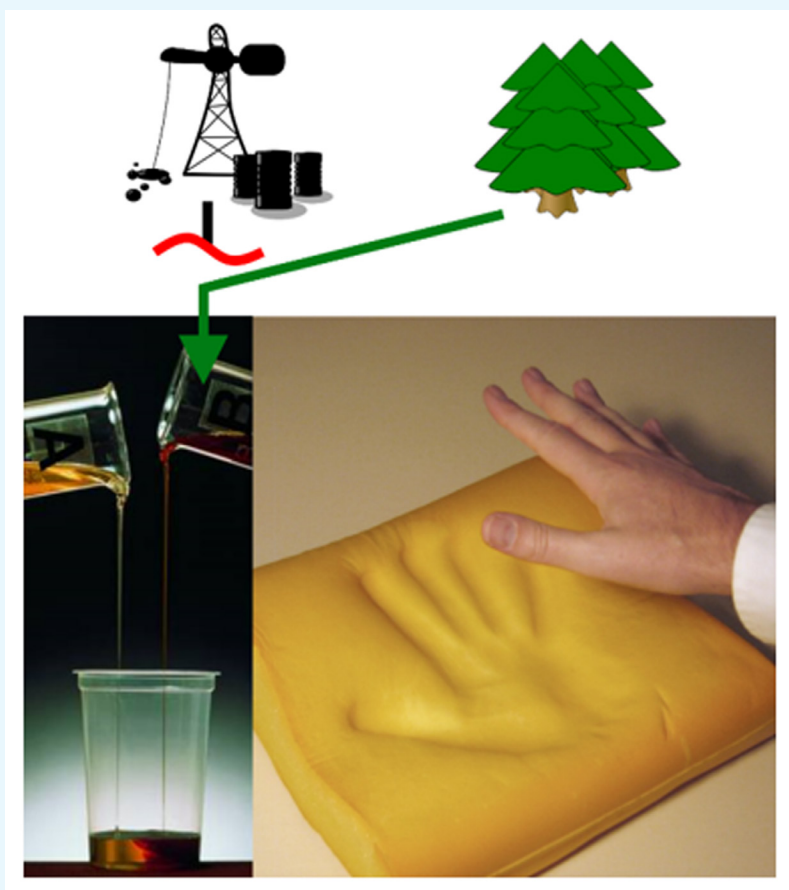
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Martin Fairbank
Consultant
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27 Petrochemical alternatives.

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