

International Pulp Bleaching Conference 2011

(IPBC 2011)

**Portland, Oregon, USA
5-7 October 2011**

ISBN: 978-1-61839-434-7

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2011) by the TAPPI Press
All rights reserved.

Printed by Curran Associates, Inc. (2012)

For permission requests, please contact the TAPPI Press
at the address below.

TAPPI Press
15 Technology Parkway South
Norcross, Georgia 30092

Phone: (800) 332-8686
Fax: (770) 209-7206

tappipress@brighkey.net

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2634
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

BLEACHING AND THE BIOREFINERY

Moderator: Peter Axegard

Bleachability of Eucalypt Kraft Pulp Derived from Auto-Hydrolyzed Chips	1
<i>Jorge L. Colodette, Gopal Goyal, Caifang Yin, José L. Gomide, Flávio Tesser</i>	
Bleaching Ability of Pre-Hydrolysed Pulps in the Context of a Biorefinery Mill.....	37
<i>Christine Chirat, Lucie Boiron, Dominique Lachenal</i>	

OXYGEN & OZONE

Moderator: Thomas J. McDonough

On the Effect of Introducing Ozone in ECF Bleaching of Eucalyptus Kraft Pulp.....	62
<i>Dominique Lachenal, Shree Prakash Mishra, Christine Chirat, Frederic Pouyet</i>	
Southern Pine Oxygen Delignified Pulps Produced in a Berty Throughflow Reactor: How to Obtain the Highest Degree of Delignification while Maintaining Pulp Yield and Quality	72
<i>Adriaan van Heiningen, Yun Ji</i>	
Achievements in Industrial Ozone Bleaching.....	85
<i>A. Metais, E. Germer, J. C. Hostachy</i>	

CIO₂

Moderator: Jorge L. Colodette

Environmental Performance of Modern ECF-Bleaching.....	119
<i>Elisabeth Bergnor, Peter Axegard</i>	
The Stoichiometry of Chlorine Dioxide Delignification of Softwood Pulps After Oxidant-Reinforced Extraction.....	150
<i>Brian N. Brogdon</i>	

PEROXIDE

Moderator: Brian N. Brogdon

Na₂CO₃ as Alkali in Hydrogen Peroxide Bleaching of Softwood Kraft Pulp.....	175
<i>Hannu Hämäläinen, Ross Anderson, Raymond Paquet</i>	
On the Role of Copper Ions in Alkaline Hydrogen Peroxide Bleaching of Kraft Pulps	200
<i>Pedro Loureiro, Sandrine Duarte, Dmitry V. Evtuguin, M. Graça V.S. Carvalho</i>	
A Novel Recovery and Recycle Process for Catalytic Molybdate in Acidic Peroxide Delignification	243
<i>Thomas Dietz, Marc Beiser</i>	

MILL PRACTICES AND APPLICATIONS I

Moderator: Paul Robilliard

Modern Bleach Plant Advanced Process Control utilizing Inline Sensors and Model Predictive Control.....	307
<i>Sandy Beder-Miller, Rick Van Fleet, Michel Dion</i>	
Differences in Bleaching Responses from Fungal versus Bacterial Enzymes	316
<i>Peter Hart</i>	
Assessment of Pulp Machine Whitewater Quality of Market Kraft Pulp Mills	347
<i>Luc Lapierre, Jean Bouchard, Richard Berry</i>	

EUCALYPTUS PULP BLEACHING

Moderator: Christine Chirat

Bleaching of Eucalyptus Kraft Pulps with Chlorine Dioxide: Factors Affecting the Efficiency of the Final D Stage	376
<i>Olena Sevastyanova, Annbritt Forsström, Eva Wackerberg, Mikael E. Lindström</i>	
Novel ECF Bleaching Sequence Using Peracetic Acid –New Possibilities and Gains	404
<i>Marcelo Moreira da Costa, Paulo Henrique Morais, Jorge L. Colodette, Marcelo Silva</i>	
Reductive Degradation of Residual Chromophores in Kraft Pulp	431
<i>Hélio J.M. Carreira, Pedro E.G. Loureiro, M. Graça V.S. Carvalho, Dmitry V. Evtuguin</i>	

ECF BLEACHING

Moderator: Ashok K. Jain

Steady-State Elemental Chlorine-Free (ECF) Bleach Sequence Modeling for Optimization: A Review of Techniques and New Applications	466
<i>Brian N. Brogdon</i>	
Combining Chlorine Dioxide and Molybdate Catalyzed Hydrogen Peroxide for Improved Delignification of Canadian Hardwood and Softwood Pulp	496
<i>Bernd Hopf, Thomas Dietz, Dan Davies, Marcus H. de Oliveira</i>	

POSTERS

TCF Bleaching Character of Soda-Anthraquinone Pulp from Oil Palm Frond	527
<i>Xiwen Wang</i>	
Chlorine Dioxide Reduction in Bleaching via Pretreatment Without Inter Stage Washing	540
<i>Ravi Gandi, Jeffery Hsieh</i>	
Using a Benchmarking Perspective to Ensure Chlorine Dioxide Availability and Competitiveness	541
<i>Kalle Pelin</i>	
Multistage Alkali Peroxide Bleaching in Low Kappa Kenaf Bast Pulp	542
<i>Farhad Zeinaly, Jalal Shakhes, Nooshin Zeinaly</i>	
The Effects of Xylanase and Acid Pre-Treatments on ECF Bleaching of Tobacco Stalk Soda-AQ Pulp.....	553
<i>Jalal Shakhes, Morteza A.B. Marandi</i>	
Author Index	