# **American Association of Textile Chemists and Colorists International Conference 2012**

(AATCC 2012)

Charlotte, North Carolina, USA 21-23 March 2012

ISBN: 978-1-62276-180-7

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<sup>©</sup> (2012) by the American Association of Textile Chemists and Colorists All rights reserved.

Printed by Curran Associates, Inc. (2012)

For permission requests, please contact the American Association of Textile Chemists and Colorists at the address below.

American Association of Textile Chemists and Colorists P. O. Box 12215 Research Triangle Park, NC 27709

Phone: (919) 549-8141 Fax: (919) 549-8933

www.aatcc.org

#### 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



## 2012 PROCEEDINGS OF AATCC INTERNATIONAL CONFERENCE

### March 21-23, 2012 Charlotte, N.C., USA

## SPEAKER PRESENTATIONS

### **OLNEY MEDAL ADDRESS**

In Praise of Textile Chemistry Martin Bide, University of Rhode Island 11

29

### **CHEMICAL APPLICATIONS TRACK**

► SESSION: Herman and Myrtle Goldstein Student Paper Competition Moderator: Renzo Shamey, North Carolina State University

An Environmentally Benign Approach to Cotton Preparation: One Bath	19
Enzymatic Desizing, Scouring and Activated Bleaching	
Min Li, North Carolina State University	

Cationic Cotton, Reservations to Reality Matthew J. Farrell, North Carolina State University

Development of Soybean and Cotton Bandages Coated with Soybean Powder and Medicine for Wound Healing P. Bala Kumaran and J. Angeline Christy, K.S. Rangasamy College of Technology	39
* * *	
A Cutting Edge Application of Knitting Technology—3D Spacer Fabrics Used as Tissue Engineering Scaffolds Ting He, North Carolina State University	B#5
SESSION: New Advances in Preparation and Dyeing Moderator: Rembert J. Truesdale, TenCate Protective Fabrics	
<i>Environmental Legislation USA</i> Henry Boyter Jr., Center for Environmentally Sustainable Textile and Apparel Businesses (CESTAB)	49
The Bioscouring Performance of Four Polygalacturonase Enzymes Michael W. Easson, USDA-ARS, SRRC	54
Studies towards the Design of Lightfast Dyes for Polyester Harold S. Freeman, North Carolina State University	61
Deaerating Agents for Textile Processing Wolfgang Höhn, Pulcra Chemicals GmbH	72
SESSION: Antimicrobials Moderator: Steve Simonson, International Textile Group Inc.	
A Durable, Light and Heat Stable and Easy-to-Use Antimicrobial Product for Textiles and Nonwovens Tirthankar Ghosh, The Dow Chemical Co.	77
Antimicrobial and Antifungal Fabric Finishing Based on PeroxideChemistry Bernd Liesenfeld, Quick-Med Technologies Inc.	89
Antimicrobial Treatment on Nonwoven Polypropylene via Plasma-Induced Graft Polymerization of DADMAC Monomer Maryam Mazloumpour, Nonwovens Institute, North Carolina State University	97
<i>Textile Coloration to Offer Photo-Induced Self-Cleaning Functions</i> Gang Sun, University of California-Davis	<b>98</b>

### **SESSION:** Performance Finishing Moderator: Peter J. Hauser, North Carolina State University

Synthesis and Characterization of the Novel Phosphonate- and Phosphonothioate-Piperazine as Flame Retardants for Cotton Thach-Mien D. Nguyen, USDA-ARS, SRRC	105
Fluorine-Free Durable Water Repellent Fernando Vazquez, Dow Corning Corp.	111
Study on Improvement of Wrinkle Recovery Finishing on Cotton Fabric using Citric Acid and Nano Technology Prashant Wasuja, Advanced Academy for Development of Textile Technologists (AADTT)	112
The Status and Performance of Non-C8 Chemistry in the Market April Wilburn, Daikin America Inc.	124
CONCEPT 2 CONSUMER <sup>®</sup> (C2C) TRACK	
SESSION: Pathway to Sustainability Moderator: Mary Brannon, Fashion Institute of Design and Merchandising	
Sustainability: A Big Picture Martin J. Bide, University of Rhode Island	125
Bluesign Karen Kyllo, SGS US Testing Service	<b>B</b> #5
<i>The Future of Sustainable Laundry Practices</i> Megan Peterson, Cotton Incorporated	132
Small Business Gone Green—From Opening to Operating an Eco-Boutique Rachel Lessne, Green Envy Eco-Boutique	142
SESSION: Beyond the Borders Moderator: Tom Stutts, Datacolor	
Update to Changes in Current International Color Standards Roland L. Connelly Sr.	143
What's in an Apparel Label? International Requirements for Labeling Jennifer Hargrave, Bureau Veritas CPS	144

Textile Industry Working Group for Collaboration and Exploration in Today's Landscape: Yes, It's Still in Your Own Backyard! Jack Bare, StarChem LLC	B#5
The National Export Initiative: How the U.S. Commercial Service Helps Connect U.S. Firms to Global Markets George Thomas, U.S. Department of Commerce	B#5
SESSION: The Power of Social Media Moderator: Kerry King, [TC]2	
Social Media: Refocusing Your Marketing Dollars Mary Brannon, Fashion Institute of Design and Merchandising	B#5
The Influence of Social Media in Marketing and Customer Relations at Southern Tide Allen Stephenson, Southern Tide	B#5
SESSION: Wear It, See It, Explore It! Moderator: Heidi Woodacre	
PBI Made in the USA—World's Leading and Only Producer: Properties and Applications of Polybenzimidazole Fiber Brian P. Shiels, PBI Performance Products Inc.	156
Prescription Manufacture: Customized Manufacturing of Wearable Technology for the Medical Industry Genevieve Dion, Drexel University	161
Fashion at the Forefront in Raleigh, N.C. Cynthia Istook, North Carolina State University	165
<i>Tech Trends from ITMA Barcelona</i> Mary Ankeny, Cotton Incorporated and Kerry King, [TC]2	Bt5
Lighting for Critical Color Viewing and Then Came LED's Nicholas Lena, GTI Graphic Technology Inc.	167
An Automated Approach for Achieving Highly Accurate Inkjet Prints for Use in the Apparel Design Process Julian P. Mussi, Spectraflow Inc.	176

### MATERIALS TRACK

SESSION: Protective Textiles Moderator: Francisco Martinez, Protect the Force	
The Effect of Phase Change Materials on the Protection Performance of Flame Resistant Fabrics Ramsis Farag, Auburn University	184
<i>Temperature Sensing Fabric for Physiological Monitoring</i> Muhammad Dawood Husain, University of Manchester	193
A Paradigm Shift in Chemical and Biological Protection: Paving the Way for Design and Development of High Performance Chemical and Biological Systems Marc Mathews, US Army Natick RD&E Center	201
U.S. Army Protective Materials for Today's and Tomorrow's Soldiers James Zheng, U.S. Army	B#5
SESSION: Medical Materials Moderator: Kyle Gipson, James Madison University	
Hydrogels for Reconstructive Surgery David Bucknall, Georgia Institute of Technology	B#5
Development of a 3D Scaffold by Green Electrospinning Seshadri Ramkumar, Texas Tech University	204
The Effects of Silver Antimicrobials on the Rehabilitation Performance of Burn Pressure Garments Nilufer Y. Varan, North Carolina State University	205
<b>Regulatory Issues Surrounding Antimicrobial Textile Products in USA</b> Min Yao, Medline Industries Inc. (Shanghai) Ltd.	218
SESSION: Specialty Materials Moderator: Fred Cook, Georgia Institute of Technology	
Amphiphilic Fabrics for Control of Microfluidic Flow Haskell Beckham, Exponent	222

Continuous Yarns via Ultra-Long Carbon Nanotubes: Scale-Up and Post Processing Jay Gaillard, Savannah River National Laboratory	227
Graphene-Coated Fibers with Unique Conductance and Capacitance Properties Ian R. Hardin, University of Georgia	237
Development of a Chemical Toxicity Sensor and its Potential in Wearable Fabric Gopal Coimbatore, Texas Tech University	242
SESSION: Innovative Technologies Moderator: Seshadri S. Ramkumar, Texas Tech University	
Breathable Medical Barrier Fabrics Rory Wolf, Enercon Industries Corp.	243
Processing High Soy Protein Content Soy Protein/PVA Blends for Biomedical and Textile Applications Michael Jaffe, New Jersey Institute of Technology	252
Microfibrillated Cellulose Fibers and Biocomposites from Aquatic Duckweed Macrophyte Suraj Sharma, University of Georgia	256
Soybeans for Fibers and Films Robina Hogan, United Soybean Board	257
• Poster Sessions	47:
Speaker Contact Information	484

• Speaker Contact Information