

The Fiber Society Fall Meeting and Technical Conference 2011

Charleston, South Carolina, USA
11-13 October 2011

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Tuesday, October 11, 2011

CAROLINA A and B

- 7:00 Registration Desk Opens
7:45 Welcome and Opening Remarks

Konstantin Kornev (FS, Co-chair)
Philip Brown (AATCC, Co-chair)
Martin Jacobs (NTC)
Ian R. Hardin, Fiber Society President
Fred L. Cook, AATCC Past President

- 8:00–8:45 Plenary Talk: Julian Vincent, University of Bath, United Kingdom
Plant Fibre Structures Inspire Novel Materials and Mechanisms

CAROLINA A

Session: Fibers from Carbon Nanotubes and Applications

Session Chair: Philippe Poulin, CNRS, France

- 9:15 *Composite Wet Spun Polymer—Nanotube Fibers* - Philippe Poulin, CNRS, France 3
9:45 *Direct Formation of Carbon Nanotube Fibers During Carbonization Process* - Teddy M. Keller, Naval Research Laboratory 5
10:15 Break
10:30 *Recent Advances in Carbon Nanotube Fibres* - Juan J. Vilatela, University of Cambridge, United Kingdom 7
11:00 *Nanotailored Carbon Fibers via Ultralong Carbon Nanotubes: Scale-up and Post Processing* - Jay B. Gaillard, Savannah River National Laboratory 8
11:30 *Surface Tension Analysis for Characterization of Carbon Nanotube Dispersion* - Vijoya Sa, Clemson University 10
12:00 Lunch On Your Own; Poster Setup, 2:00–4:00, Carolina AB
1:30–5:00 **Student Paper Competitions, Gold Ballroom**
5:15–7:00 **Poster Session, Table Tops, and Reception, Carolina AB**

CAROLINA B

Session: Fiber Spinning

Session Chair: Philip J. Brown, Clemson University

- 9:15 *Structure of Porous, High-modulus Polypropylene Fibers* - David R. Salem, South Dakota School of Mines & Technology 15
9:45 *Temperature-responsive Fibers for "Smart" Thermal Insulation* - Stephen A. Fossey, U.S. Army Natick Soldier RDE Center 17
10:15 Break
10:30 *From Centrifugal Spraying to Nanofiber Spinning* - Tao Huang, DuPont 19
11:00 *Free-surface Electrospinning from a Wire Electrode* - Keith M. Forward, MIT 21
11:30 *Properties of Nanoclay-added Composite Polypropylene Monofilaments Using Twin and Single Screw Extruders* - Sabit Adanur, Auburn University 22
12:00 Lunch On Your Own; Poster Setup, 2:00–4:00, Carolina AB
1:30–5:00 **Student Paper Competitions, Gold Ballroom**
5:15–7:00 **Poster Session, Table Tops, and Reception, Carolina AB**

GOLD BALLROOM

Session: Multifunctional Fibers

Session Chair: Rudolf Hufenus, Empa, Switzerland

- 9:15 *Design and Development of Fibers with Flexure Rate-dependent Viscoelastic Properties* - Rudolf Hufenus, Empa, Switzerland 27
9:45 *A Study on the Photostability of Photochromic Fabrics from Hybrid Organosilica Coatings* - Marzieh Parhizkar, Deakin University, Australia 29
10:15 Break
10:30 *Piezoelectric Sensor Fibers Based on Meltspun Poly(vinylidene fluoride) and Electrically Conductive Polymer Nanocomposites* - Stephan Walter, RWTH Aachen University, Germany 31
11:00 *Bamboo: A Multifunctional "Green" Fibre* - Tarannum Afrin, Deakin University, Australia 33
11:30 *Self-decontaminating Multifunctional Nano/Submicrofibers and Nanofibrous Membranes* - Gang Sun, University of California, Davis 35
12:00 Lunch On Your Own; Poster Setup, 2:00–4:00, Carolina AB

- 1:30 **Fiber Society Student Paper Competition**
- 2:45 Break
- 3:00 **NTC Student Paper Competition**
- 5:00 Session Concludes
- 5:15–7:00 **Poster Session, Table Tops, and Reception, Carolina AB**

Wednesday, October 12, 2011

CAROLINA A

Session: Electrospun Nanofibers for Composites

Session Chair: Yuris Dzenis, University of Nebraska, Lincoln

- 8:00 *The History of the Science and Technology of Electrospinning from 1600 to 1995* - Kathleen Hofman, NZ Institute for Plant & Food Research, New Zealand 39
- 8:30 *Mechanical and Morphological Properties of Polymer Nanofibers* - Darrell H. Reneker, University of Akron 41
- 9:00 *Polymer Dynamics During Solution Electrospinning: Experimental Observations of the Structure of the Jet* - Eyal Zussman, Technicon, Israel 42
- 9:30 *Production and Characterization of Electrospun Polyaniline Fibers with High Electrical Conductivity* - Yuxi Zhang, MIT 44
- 10:00 Break
- 10:15 *Onset of Electrospinning* - David Lukáš, Technical University of Liberec, Czech Republic 46
- 10:45 *Electrospun Nanofibrous Mats for Composite Membranes* - Benjamin Chu, Stony Brook University 48
- 11:15 Open
- 11:45 Lunch On Your Own

Session: Electrospun Nanofibers for Composites (continued)

Session Chair: Yuris Dzenis, University of Nebraska, Lincoln

- 1:30 *Needleless Electrospinning and Direct Electrospinning of Nanofiber Yarns* - Tong Lin, Deakin University, Australia 50
- 2:00 Open
- 2:30 *Biom mineralized, Highly Aligned, Nanofiber Array-based Building Unit for Bone Regeneration* - Eleni Katsanevakis, Clemson University 52
- 3:00 *Continuous Nanofiber: Reinforced Structural Nanocomposites* - Yuris Dzenis, University of Nebraska, Lincoln 54
- 3:30 Break

Session: Advances in Fiber-based Materials

Session Chair: Sergey Lopatnikov, University of Delaware

- 3:45 *Optimizing Conditions for Creating Graphene Coatings to Create Unique Textile Materials* - Ian R. Hardin, University of Georgia 57
- 4:15 *Effect of Cotton Fiber Properties on Properties of Hydroentangled Nonwoven Fabrics* - Paul Sawhney, USDA-ARS-SRRC 59
- 4:45 *Tunable Capillary Pore Membranes* - Glen E. Simmonds, DuPont 61
- 5:15 *Effects of Abrasion on Tenacity of Synthetic Fibers* - A. Abu Obaid, University of Delaware 63
- 5:45 Session Concludes
- 6:00–6:45 **Fiber Society Annual Business Meeting, Gold Ballroom: Open to Fiber Society Members Only**
- 7:00 **Reception, Hotel Lobby**
- 7:30 **Awards Banquet, Colonial Ballroom**
- Speaker:** Dr. Adrian Freed, CNMAT, UC Berkeley, and Fine Arts, Concordia University, Montreal
Building Interactivity in Textiles and Related Fibers

CAROLINA B

Session: Advanced Textile Materials

Session Chair: Martin I. Jacobs, National Textile Center

- 8:00 *Photovoltaic Fiber Having Zinc Oxide-Nanoparticles (ZnO-np) and Inverted Layer Sequence* - İsmail Borazan, İstanbul Technical University, Turkey 67
- 8:30 *Textile Heartvalve Prosthesis: Assessment of In Vivo Performances* - Frederic Heim, ENSISA, France 69
- 9:00 *De Novo Assembly of Extracellular Matrix Proteins* - Mohammad R. Badrossamay, Harvard University 71

- 9:30 *Breathable Liquid Repellent Polypropylene Nonwovens for Surgical Gowns* - Seshadri Ramkumar, Texas Tech University 73
 10:00 Break

Session: Fiber Science Theory and Computer Simulations

Session Chair: Alejandro Rey, McGill University, Canada

- 10:15 *A Model for Mesophase Wetting of Sheets, Fiber, and Fiber Bundles* - Alejandro D. Rey, McGill University, Canada 77
 10:45 *Nonclassical Scaling for Forced Wetting of a Nematic Fluid on a Polymeric Fiber* - Mohan Srinivasarao, Georgia Institute of Technology 79
 11:15 *Textile Composite Structures for Sensor Data Transport from Ocean Depths to Internet* - Walter Paul, Woods Hole Oceanographic Institution 81
 11:45 Lunch On Your Own

Session: Fiber Science Theory and Computer Simulations (continued)

Session Chair: Alejandro Rey, McGill University, Canada

- 1:30 *Bending and Position Hysteresis of Magnetic Microfibers in Nonuniform Magnetic Fields* - Richard E. Groff, Clemson University 83
 2:00 *Structure and Mechanics of Fiber-reinforced Cylindrical Membranes* - Yogesh Kumar Murugesan, McGill University, Canada 85
 2:30 *Chains of Superparamagnetic Nanoparticles as Biomedical Sensing and Diagnostic Tools* - Gary Friedman, Drexel University 87
 3:00 *Characterization of Interfiber Capillary Distance for C-CP Polymer Fiber Separations Columns* - Christopher L. Cox, Clemson University 89
 3:30 Break
 3:45 *Dynamics of Rotational Film Fibrillation and Nanofiber Formation* - Tao Huang, DuPont 91

Session: Control of Fiber Structures

Session Chair: Takeshi Kikutani, Tokyo Institute of Technology, Japan

- 4:15 *Effect of the Blending of High-tacticity Component on the Structure and Properties of Elastomeric Fibers of Low-tacticity Polypropylene* - Takeshi Kikutani, Tokyo Institute of Technology, Japan 95
 4:45 *Polymer Fiber-based Field Effect Transistors: Advances and Opportunities* - Richard Gregory, Old Dominion University 97
 5:15 *A Process for Noncircular, High-luster Acrylic Fiber* - Anasuya Sahoo, Aditya Birla Science & Technology, India 99
 5:45 Session Concludes

6:00–6:45 Fiber Society Annual Business Meeting, Gold Ballroom: Open to Fiber Society Members Only

7:00 Reception, Hotel Bar

7:30 Awards Banquet, Colonial Ballroom

Speaker: Dr. Adrian Freed, CNMAT, UC Berkeley, and Fine Arts, Concordia University, Montreal
Building Interactivity in Textiles and Related Fibers

GOLD BALLROOM

Session: Carbon Fibers and Composites

Session Chair: Amod Ogale, Clemson University

- 8:00 *Crystalline and Tensile Properties of Carbon Nanotube-filled Polyamide-12 Fibers Meltspun by Industry-related Processes* - Sanjukta Chatterjee, Empa, Switzerland 103
 8:30 *Electromagnetic Shielding Mechanisms of Ultrahigh Thermally Treated Carbon Nanofibers-LLDPE Nanocomposites* - Byron Villacorta, Clemson University 105
 9:00 Open
 9:30 *Mechanical Properties of Composite Plates Produced from 1x1 Rib Knit Fabrics with Carbon Fibers* - Mehmet Emin Yuksekkaya, Usak University, Turkey 107
 10:00 Break
 10:15 *High Thermal Conductivity Carbon Fibers and Fabrics: Low-cost Petroleum Pitch Precursors* - Young-Pyo Jeon, Clemson University 109
 10:45 *Rapid Manufacture of Carbon Fiber from Organosolv Lignins* - Darren A. Baker, University of Tennessee 111
 11:15 Open
 11:45 Lunch On Your Own

Session: Fiber-based Probes and Sensors**Session Chair: Margaret Frey, Cornell University**

- 1:30 *Electrospun Nanofibers for Microfluidic Analytical Systems* - Margaret W. Frey, Cornell University 115
2:00 *Micro- and Nanofiber Bundles as a Platform for Sensitive Detection of Biomacromolecules* - Kenneth A. Christensen, Clemson University 117
2:30 *Fabrication and Characterization of Electrospun Semiconductor Nanoparticle-Polyelectrolyte Ultrafine Fiber Composites* - Caroline L. Schauer, Drexel University 119
3:00 *Development of a Rapid Fiber-based Immunoassay* - Ryan Waddell, Clemson University 121
3:30 Break
3:45 *Fiber-based Biosensors for mRNA Extraction from Cells* - Victor Maximov, Clemson University 123
4:15 *Self-assembly of Optically Responsive Nematic Liquid Crystal/Polymer Core-Shell Fibers* - Ebru A. Buyuktanir, Kent State University 125

Session: Functionalization of Fiber Surfaces**Session Chair: Igor Luzinov, Clemson University**

- 4:45 *Microwave-promoted Deposition of Functionalized Nanoscopic Silica Coatings for Protective Textile Applications* - Jeffery Owens, AFRL 129
5:15 *Surface-tethered (Bio)Macromolecular Nanostructures Synthesis and Characterization* - Stefan Zauscher, Duke University 130
5:45 Session Concludes

6:00–6:45 Fiber Society Annual Business Meeting, Gold Ballroom: Open to Fiber Society Members Only**7:00 Reception, Hotel Bar****7:30 Awards Banquet, Colonial Ballroom**

Speaker: Dr. Adrian Freed, CNMAT, UC Berkeley, and Fine Arts, Concordia University, Montreal
Building Interactivity in Textiles and Related Fibers

Thursday, October 13, 2011**CAROLINA A****Session: Protective Clothing and Wetting of Textiles****Session Chair: Jeffery Owens, AFRL**

- 8:00 *Dynamics of a Drop on Elastic Fibers* - Camille Duprat, Princeton University 139
8:30 Open
9:00 *Textiles for the Next Generation of Military Clothing* - Eugene Wilusz, U.S. Army Natick Soldier RDE Center 140
9:30 *Toward Self-cooling Gradient Shell for Body Armor* - Ruslan Burtovyy, Clemson University 141
10:00 Break
10:15 *Oleophobic Coating for Self-cleaning, Fluid-resistant Textiles* - Laura Habersack, Luna Innovations Inc. 142
10:45 *Observations on the Behaviour of Chemical Warfare Agents and Other Liquids on Super-repellent Textiles* - Corrine Stone, Dstl, United Kingdom 144
11:15 *Moisture Transport and Reaction Enhancements in Fabrics* - Heidi Schreuder-Gibson, U.S. Army Natick Soldier RDE Center 146
11:45 *Wettability Gradient-driven Directional Water Transport Across Thin Fibrous Materials* - Tong Lin, Deakin University, Australia 148
12:15 *Generation of Short Hypersonic Water Jet for Testing of a Material's Rain Erosion Resistivity* - Sergey Lopatnikov, University of Delaware 150
12:45 Conference Concludes

CAROLINA B**Session: Biomimetics for Fiber Science****Session Chair: You-Lo Hsieh, University of California, Davis**

- 8:00 *Artificial Proboscises* - Konstantin G. Kornev, Clemson University 153
8:30 *Botanical Hydroscopic Shape Change Mechanisms for Composite Textile Systems* - Veronika Kapsali, MMT Textiles, United Kingdom 154
9:00 *Ant-Tex: 3-D Visualization of the Water-repellent Network of Fire Ants* - Nathan Mlot, Georgia Institute of Technology 156

- 9:30 *Structure-Function Relationships in Synthetic Spider Silk Fibers Made from Chimeric Proteins* - Florence Teulé, Utah State University 158
- 10:00 Break
- 10:15 *Biopolymer-assembled Nanofibers* - You-Lo Hsieh, University of California, Davis 160
- 10:45 *Biochemical Characterization of Spidroin Self-assembly* - William Marcotte, Clemson University 162

Session: Polymer Synthesis and Recycling

Session Chair: Fred Cook, Georgia Institute of Technology

- 11:15 *Removal of Spandex from Polyamide/Spandex-blended Fabrics by Selective Depolymerization* - Youjiang Wang, Georgia Institute of Technology 165
- 11:45 *Polymer Waste Streams for Synthetic Turf Infill* - Richard E. Harper, Georgia Institute of Technology 167
- 12:15 *Comparative Study of Characteristics of Knitted Fabrics Made of Recycled Fibres* - Karina Takamune, University of São Paulo, Brazil 169
- 12:45 Conference Concludes

GOLD BALLROOM

Session: Functionalization of Fiber Surfaces (continued from Wednesday)

Session Chair: Igor Luzinov, Clemson University

- 8:00 *Surface Functionalization of Fibers by Grafting to Method* - Igor Luzinov, Clemson University 131
- 8:30 *Inkjet Printing Equipment for Narrow Fabrics* - Bertram Wendisch, ENSISA, France 132
- 9:00 *Formation and Application of Functional Coatings on Synthetic Fibers* - Jan Genzer, North Carolina State University 134
- 9:30 *Stimuli-responsive Alginate Fibers* - Sergiy Minko, Clarkson University 135
- 10:00 Break

Session: Optical Fibers

Session Chair: Sylvain Danto, Clemson University

- 10:15 *Investigation of Subcritical Crack Growth in Glass Fibers Using Load Relaxation Tests on Bundles* - Jacques Lamon, CNRS/National Institute of Applied Science, France 173
- 10:45 *Advances in Semiconductor Core Optical Fibers* - Stephanie Morris, Clemson University 175
- 11:15 *A Phototherapy Device Prototype for Neonatal Jaundice Based on POF Fabric* - Jing Shen, Hong Kong Polytechnic University, China 177
- 11:45 *Low-loss, High-strength Fibers from Improved Chalcogenide Glasses* - Sylvain Danto, Clemson University 179
- 12:15 *Optically Active Polymeric-based Fibers* - Philip Brown, Clemson University 180
- 12:45 Conference Concludes

Poster Session: Tuesday, October 11, 5:15–7:00, Carolina AB
Session Chair: Konstantin Kornev

Presenter	Title
Mohamed Boutaayamou	<i>Study of Conduction Mechanisms in Antistatic Felts at the Mesoscopic Scale</i> 183
Maja Somogyi Skoc	<i>Properties and Preparation of Resistant Polyurethane-coated Fabrics to Ageing by Sol-Gel Thin Films</i> 185
HoDong Kim	<i>A Study on Physical Property of Cement Composite Reinforced with Silane-treated Basalt Chopped Fiber</i> 187
Kara Phillips	<i>Natural Versus Manmade Fabrics: Anisotropic Mechanical Properties</i> 189
Phil Gibson	<i>Dynamic Permeability of Porous Elastic Fabrics</i> 191
Zhi-juan Pan	<i>Effects of Heat Treatment on the Morphology and Mechanical Property of Electrospun PSU Nanofibrous Membrane</i> 193

Sun Young Park	<i>The Influence of Spinning Parameters on PVDF Nanofiber Crystallinity and Crystalline Phase Formation</i> 195
Sang Joon Yoon	<i>Coiled Fibers of Poly(amide-co-imide) and Poly(trimellitic anhydride chloride-co-4,4'-methylene dianiline) by Using Mechano-Electrospinning</i> 197
Chen-Chih Tsai	<i>Highly Aligned Electrospun Nanofiber Yarns</i> 199
Maryana Kovalchuk	<i>Fiber-based Probes for Cell Analyses</i> 201
Tieling Xing	<i>Structure and Properties of Silk Grafted with N,N-Dimethylaminoethyl Methacrylate via ARGET ATRP Method</i> 203
Austin Beachler	<i>Spreading of Liquids on Porous Surfaces</i> 205
Mahmut O. Kesimci	<i>Development of Surface Differential Scanning Calorimeter for Evaluation of Evaporative Cooling Efficiency</i> 207
Taras Andruk	<i>Imbibition of Liquids into Capillaries</i> 209
Nancy Elizabeth Allen	<i>Incorporation and Performance of Molecular Polyoxometalates in Cellulose Substrates</i> 210
Xiao-Shi Xu	<i>Mechanism of Surface Roughness Development in Melt Spinning of Blend Fibers for Artificial Hair</i> 212
Michael S. Ellison	<i>The Challenges of Material Selection for Compliant Robotic Surfaces</i> 214
Sam Lukubira	<i>Melt Spinning of Soy Flour-based Fibers</i> 216
Martin W. King	<i>The Effect of Silver Antimicrobials on the Physical and Thermophysiological Properties of Burn Pressure Garments</i> 218
Mustafa E. Üreyen	<i>Imparting Multifunctional Properties to PES/Cotton Woven Fabrics by Fluorocarbon and Silver-based Finishing Agents</i> 220
Laura E. Lange	<i>Effects of Plasma Etching on Self-decontaminating Properties of Magnesium Oxide Nanoparticles in Polypropylene Fibers</i> 222
Zarife Doğan	<i>A Novel Silver Sulfadiazine-loaded Electrospun Nanofiber Wound Dressing</i> 224
Usha Sayed	<i>Biomimicking of Enzymes for Textile Processing</i> 226
Chen-Chih Tsai	<i>Microwave Heating Study of Carbon Nanofiber Nanocomposites no hyphen</i> 228
Shinjung Yoo	<i>Upper Body Sweat Rate, Skin Temperature, and Clothing Microclimate Distribution During Winter Cycling with Air Flow</i> 229
Kaiyan Qiu	<i>“Green” Composites Using Soy Protein Resin and Novel Low-cost Carbon Source-based Bacterial Cellulose</i> 231
Yinan Lin	<i>Mechanical Properties of Polymer Nanofibers Revealed by Interaction with Streams of Air</i> 233
Daria Monaenkova	<i>Bernoulli Catenary and Elasto-capillary and –wetting Effects of Fibrous Materials</i> 235
Usha Sayed	<i>Anti-soiling Finish of Polyester Fabrics</i> 237
Lin Shu	<i>Intelligent Footwear System for Continuous Dynamic Foot Monitoring in Daily Activities Based on Fabric Pressure Sensors</i> 239
Nyssa Thongthai	<i>The Effect of Annealing and Doping on Crystallinity and Conductivity in Polyaniline for Processable Films and Fiber</i> 241
Kathleen Hofman	<i>A History of Electrospinning 1600–1995</i> 243

NTC Posters

Title

- Blue Light Curable Ink Chemistry for Textile Digital Printing* 244
- Active Nanocoatings for Textiles* **245**
- Novel Polymerizable Bifunctional Flame Retardants* **246**
- Polymer Flow in Confined Elastic Boundaries: Stronger Continuous Nanofibers* **247**
- Engineered Reinforced Structures from Short Fibers* 248
- Fiber-based Bioreactor Media for Air Pollution Control* **249**
- Challenges in Advanced Nanofiber Wound Dressings* 250
- Fluids in Fabrics* 251
- Melt Spinning of Cellulose-based Fibers* **252**
- 3D Textile Architecture for Tissue Engineering Scaffold* **253**
- Fiber-based Biohazard Sensor Assemblies* 254
- Electroluminescence* 255
- Nanoscale Surface Embrittlement of Fibers* **256**
- Electrospun Composite Nanofibers for Lithium-Ion Batteries* **257**
- Muscle-like Extruded Fiber Actuators* 258
- Functional Fibers via Biomimetics and Inorganic-Organic Hybrids* **259**
- Feasible Fiber-Nanoparticle Systems for Commercial Applications* 260
- Nanofibrous Materials as Sensors for Heavy Metals* 261
- Light Emitting Nanocomposite Fibers (LENFs)* 262
- Functional Polymer-Polymer/Carbon Nanotube Bicomponent Fibers* 263
- Masculine Style(s): Shifting Identities and Textile/Apparel Industry Opportunities* 264
- National Research Network on Multifunctional Protective Clothing* **265**
- Effective Thermal Conductivity of Fibrous Materials* **266**
- Development of Visual Fit Assessment Tool for Apparel Firms* **267**
- Integrated System to Design and Produce Engineered Knit Garments* **268**
- Logistics of Closed Loop Textile Recycling* **269**
- Sustainability Checklist Manifesto for New Textile Products* **270**

Additional Papers:

- Plant Fibre Structures Inspire Novel Materials and Mechanisms 271
- Building Interactivity in Textiles and Related Fibers 272