

The Fiber Society Fall Meeting and Technical Conference 2013

Clemson, South Carolina, USA
23 - 25 October 2013

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For permission requests, please contact The Fiber Society
at the address below.

The Fiber Society
P.O. Box 40565
Raleigh, NC, 27629-0565
USA

Phone: (919) 515-6568
Fax: (919) 515-3733

pam.fibersociety@gmail.com

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Wednesday, October 23

Morning

7:00 Registration Desk Opens; Breakfast Bar (ballroom area)

BALLROOM

- 8:00 Welcome and Opening Remarks
Konstantin Kornev (Fiber Society, Co-chair)
Rudolf Hufenus, Fiber Society President
Michael Ellison (Fiber Society, Co-chair)
Nadim Aziz, Interim Provost, Clemson University
Larry Dooley, Vice-president for Research, Clemson University
- 8:25 Plenary Speaker: Vladimir Tsukruk, Georgia Institute of Technology, Atlanta, Georgia, USA
*Engineered Bionanocomposites*0008
- 9:05 Break (North Lobby)

Keynote Sessions

MEETING ROOM 1

Session: Biomimetics and Bioinspiration

Session Chair: Raúl J. Martín-Palma, Pennsylvania State University

- 9:15 *Structural and Functional Versatility of the Fiberlike Butterfly Proboscis as a Model for Engineering Microfluidic Devices* – Peter H. Adler, Clemson University0007;
- 9:45 *Bio-inspired Color-tunable Photonic Fibers* – Mathias Kolle, Harvard University00079
- 10:15 *Cellulose Nanocrystals: An Opportunity for Continuous Fibers?* – Robert J. Moon, U. S. Forest Service, Forest Products Laboratory00083
- 10:45 Break
- 11:00 *Natural Wood Fiber as Building Block for Electronic and Energy Storage* – Hongli Zhu, University of Maryland00077
- 11:30 *Biocatalytic Nanofibers with Stabilized Enzymes* – Seong H. Kim, Pennsylvania State University00084
- 12:00 Lunch in Grand Hallway

MEETING ROOM 2

Session: Ceramic Fibrous Materials

Session Chair: Fei Peng, Clemson University

- 9:15 *Mechanical Properties of Electrospun Mullite Fibers* – Fei Peng, Clemson University0000 3
- 9:45 *Continuous Boron-Nitride Nanotube Yarn* – David S. Lashmore, University of New Hampshire00009;
- 10:15 *Ceramic Fibers: Review of the Current Status and Recent Developments* – Rajendra K. Bordia, Clemson University0000 6
- 10:45 Break
- 11:00 *Controlled Crystallization of Oxide Fibers* – W. M. Kriven, University of Illinois, Urbana-Champaign0000 7
- 11:30 *Brillouin-almost-free Optical Fibers* – John Ballato, Clemson University0000 4
- 12:00 Lunch in Grand Hallway

MEETING ROOM 3

Session: Spider Silk and Natural Fibers

Session Chair: Florence Teulé, University of Wyoming

- 9:15 *Analysis of the Orb Spider Dragline Silk During Evolution* – Concepción Solanas, Universidad Politécnica de Madrid0000425
- 9:45 *DNA Microarray Analysis: A Tool to Identify New Components of Spider Fibers and the Silk Assembly Pathway* – Craig Vierra, University of the Pacific0000427
- 10:15 *Dissecting Self-assembly of Spider Dragline Silk* – William R. Marcotte, Jr., Clemson University0000429

- 10:45 Break
 11:00 *Insights from Simulated Cellulose Diffraction Patterns* – Alfred D. French, U. S. Department of Agriculture000423
 11:30 *Amphiphilic Nanofibers and Super-absorbent Aerogels* – You-Lo Hsieh, University of California, Davis00042:
 12:00 Lunch in Grand Hallway

MEETING ROOM 4

Session: Fibers in Multiscale Composites

Session Chair: David Salem, South Dakota School of Mines and Technology

- 9:15 *Routes to Achieving “Bright” Near-infrared fluorescing Nanoparticles: Controlling Chromosphere Aggregation* – Stephen H. Foulger, Clemson University000355
 9:45 *Carbon Nanotube Enhanced Epoxy Carbon Fiber Composite Materials* – Srinagesh K. Potluri, Zyvex Technologies000353
 10:15 *Hybrid Multiscale Composite with Electrospun Carbon Nanofibers* – Hao Fong, South Dakota School of Mines and Technology000347
 10:45 Break
 11:00 *Nanofiber-based Electrodes for Energy Storage* – Vibha Kalra, Drexel University000356
 11:30 *Multimaterial Fibers: Prospects for Nanotechnology, Biotechnology, and Photonics* – Ayman F. Abouraddy, University of Central Florida000337
 12:00 Lunch in Grand Hallway

Afternoon

Graduate Student Paper Competition Session

BALLROOM

Session: Graduate Student Paper Competition

Session Chair: Laurence Schacher, Graduate Student Paper Competition Chair

- 1:05 Yu Gu, Clemson University – *Bending Hysteresis of Polymeric Fibers Caused by Micro- and Nano-Newton Forces*00031C
 1:30 Selcuk Poyraz, Auburn University – *One-step Synthesis and Characterization of Poly(o-toluidine) Nanofiber/Metal Nanoparticle Composite Networks as Non-enzymatic Biosensors*00031C
 1:55 Katrina A. Rieger, University of Massachusetts Amherst – *Antibacterial Activity of Electrospun Chitosan-Cinnamaldehyde Nanofiber Mats*00031C
 2:20 Break; Poster setup starting at 3:00 in Grand Hallway

Regular Sessions

MEETING ROOM 1

Session: Natural Polymers for Multifunctional Fibrous Materials

Session Chair: Caroline Schauer, Drexel University

- 2:35 *Piperazine-Phosphate Derivatives: Their Flame Retardant and Thermal Degradation Properties on Cotton Fibers* – Thach-Mien D. Nguyen, U. S. Department of Agriculture0003: 2
 2:55 *Regulating Nanoparticle Deposition Using Biomimetic Surfaces with Actuated Filaments* – Alexander Alexeev, Georgia Institute of Technology00038;
 3:15 *Fiber Spinning and Characterization of Cellulose and Chitin Nanocomposite Fibers* – Chenchen Zhu, University of Bristol000393
 3:35 Break
 3:50 *Smart Biofunctional Fibers as Affinity Membranes for Enzymatic Detection* – Juana Mendenhall, Morehouse College000396

- 4:10 *Immobilizing Microbes on Cellulose Fiber Mats* – Jessica D. Schiffman, University of Massachusetts, Amherst000895
- 4:30 *A New Approach of Denaturing Globular Proteins for Fabrication of Fibers* – Abolfazl Aghanouri, University of California, Davis000889
- 4:45 *Spacer Motif Contributes Tensile Strength to Recombinant Nephila clavipes Flagelliform-like Silk Protein Fibers* – Sherry L. Adrianos, University of Wyoming00089:
- 5:05 *Characterization of Nephila clavipes Dragline Surface II: Amino Acid Mapping* – Michael Ellison, Clemson University000898
- 5:30-7:00 **Poster Session and Reception; Table Top Exhibits ~ in Grand Hallway**

MEETING ROOM 2

Session: Advanced Fiber-based Materials

Session Chair: Yves-Simon Gloy, Aachen

- 2:35 *Fibers for Radiation Protective Textiles* – Boris Mahltig, Niederrhein University of Applied Sciences00083
- 2:55 *Strain Distribution and Engineering of Ballistic Fabrics* – Xiaogang Chen, University of Manchester00042
- 3:15 *Elastic Polyimide Nonwovens* – Glen E. Simmonds, E.I. duPont de Nemours and Company00085
- 3:35 Break
- 3:50 *Effect of Thermal Treatment on the Spin Finish in Precursor Fiber: A Solid-state NMR Study* – Sushanta Ghoshal, Georgia Institute of Technology0008:
- 4:10 *Effects of Impurity and Residue Deposition on the Growth of Ultra-long Tungsten Oxide and Sodium Tungsten Oxide Nanowires* – Haitao Zhang, University of North Carolina, Charlotte00087
- 4:30 *Orientation-controlled Growth of Uniform Zinc Oxide Nanowire Arrays* – Ren Zhu, University of Minnesota00089
- 4:45 *Long-term Stability of UHMWPE Fibers* – Amanda L. Forster, National Institute of Standards and Technology0000
- 5:05 *Automated Processes for the Production of High-quality Textile Preforms* – Yves-Simon Gloy, RWTH Aachen University00044
- 5:30-7:00 **Poster Session and Reception; Table Top Exhibits ~ in Grand Hallway**

MEEETING ROOM 3

Session: Cellulose-based Fibrous Materials

Session Chair: Alfred French, U. S. Department of Agriculture

- 2:35 *Unraveling Cellulose Microfibrils: A Twisted Tale* – Alfred D. French, United States Department of Agriculture00089
- 2:55 *Effect of Alkali Treatment on Tensile Properties of Sugarcane Fibers* – Ramsis Farag, Auburn University00094
- 3:15 *Biobased Polymeric Materials from Micro-Algae and Its Thermoplastic Blends* – Sandy Daubenmire, University of Georgia00097
- 3:35 Break
- 3:50 *Multiprotective Functions on Cellulose Materials Introduced by Anthraquinone Vat Dyes* – Jingyuan Zhuo, University of California, Davis0008;
- 4:10 *Nanofibers as an Immunoassay Substrate* – Ryan Waddell, Clemson University00095
- 4:30 *Effect of Water Quality and Water Stress Levels on Chemical Properties of Cotton Fibre* – Muhammad Iftikar, University of Agriculture00093
- 4:45 *Open*
- 5:05 *Open*
- 5:30-7:00 **Poster Session and Reception; Table Top Exhibits ~ in Grand Hallway**

MEETING ROOM 4

Session: Fibers in Multiscale Composites

Session Chair: David Salem, South Dakota School of Mines and Technology

- 2:35 *Nanoscale Infrared Spectroscopy of Fiber Composite Materials* – Curtis A. Marcott, Light Light Solutions000B3;
- 2:55 *Micro- and Nano-channeled Materials for Structural, Thermal Insulation Composites (STICs)* – Eric D. Schmid, South Dakota School of Mines and Technology000B45
- 3:15 *Piezoelectric Electrospun Polyvinylidene Fluoride/Carbon Nanotube Composite Microfibers* – Margaret Frey, Cornell University000B49
- 3:35 Break
- 3:50 *Thermal and Purity Measurement Methodology in Lignin Assessment for Extrusion* – Darren A. Baker, University of Tennessee000B43
- 4:10 *Optimization of Process Parameters of Wet-spun Solid PVDF Fibers for Maximizing the Tensile Strength and Applied Force at Break Using Taguchi Method* – Mevlüt Taşcan, Zirve University000B4;
- 4:30 *Quantifying Damage at Multiple Loading Rates to Kevlar KM2 Fibers Due to Weaving and Finishing* – Brett Sanborn, U. S. Army Research Laboratory000B39
- 4:45 *Open*
- 5:05 *Open*
- 5:30-7:00 **Poster Session and Reception; Table Top Exhibits ~ in Grand Hallway**

Thursday, October 24

Morning

- 7:30 Breakfast Bar (ballroom area)

BALLROOM

- 8:30 Plenary Speaker: Alan Windle, University of Cambridge, Cambridge, United Kingdom
*On the Strength of Carbon Nanotube Fibres*0005
- 9:10 Break

Keynote Sessions

MEETING ROOM 1

Session: Applied Science and Engineering of Fibrous Materials

Session Chair: Dmitry Luzhansky, Donaldson Company, Inc.

- 9:15 *A New Scalable Technique for Continuous Nanofiber Fabrication from Sheared Liquid Dispersions* – Miles C. Wright, Xanofi, Inc.000i 062
- 9:45 *Commercial Finest Fibers Technologies* – Martin Dauner, Institut fuer Textil -und Verfahrenstechnik00056
- 10:15 *Nanofiber Meltspinning Technologies* – Timothy Robson, Hills, Inc.00068
- 10:45 Break
- 11:00 *Centrifugal Melt-Spun Nanoweb* – Carl Saquing, DuPont Central Research and Development00049
- 11:30 *New Variant of Electrospinning: A Collector-less Method* – David Lukáš, Technical University of Liberec0004;
- 12:00 Lunch in Grand Hallway

MEETING ROOM 2

Session: Fibrous Biomaterials

Session Chair: Ken Webb, Clemson University

- 9:15 *Capillary Channel Polymer Fibers in Regenerative Medicine* – Ken Webb, Clemson University0000 9
- 9:45 *Various-sourced Pectin and Polyethylene Oxide Electrospun Fibers* – Caroline L. Schauer, Drexel University0000 ;

- 10:15 *Applications for Spider Silk Nonwovens Meshes* – Thomas Scheibel, University of Bayreuth
 10:45 Break000326
 11:00 *Micro- and Nano-self-healable Polymeric Fibers: Recent Advances and Future Opportunities* – Marek W. Urban, Clemson University000323
 11:30 *Capillary-channeled Polymer (C-CP) Fiber Phases for Analytical and Preparative Protein Separations* – R. Kenneth Marcus, Clemson University00017
 12:00 Lunch in Grand Hallway

MEETING ROOM 3

Session: Textile Product Development

Session Chair: Billie J. Collier, Florida State University

- 9:15 *Engineering the Transport Properties of Heterogeneous Fibrous Constructs for Various Applications* – Jintu Fan, Cornell University000458
 9:45 *Practical Considerations on Large-scale Production of Nanofiber-based Products* – H. Young Chung, Et Usus000455
 10:15 *Nano-mechanical Characterization of Viscoelastic Properties in Polymers and Fibers* – Sandip Basu, Agilent Technologies000468
 10:45 Break
 11:00 *Comfort of Clothing Under Real Conditions of Its Use* – Lubos Hes, Technical University of Liberec000464
 11:30 *Enzymes for Fiber Surface Modification and Processing* – Ian R. Hardin, University of Georgia000456
 12:00 Lunch in Grand Hallway

MEETING ROOM 4

Session: Nanotube and Graphitic Fibers

Session Chair: Juan José Vilatela, IMDEA Materials Institute

- 9:15 *Multiscale Engineering of Carbon Nanotube Fibres* – Juan J. Vilatela, IMDEA Materials Institute000376
 9:45 *Strong, Light, Multifunctional Fibers of Carbon Nanotubes with Ultrahigh Conductivity* – Matteo Pasquali, Rice University000377
 10:15 *CNT Fiber Microelectrodes for Electrochemical and Electromechanical Applications* – Philippe Poulin, Bordeaux University000382
 10:45 Break
 11:00 *Ultratough Graphene Oxide and Graphene Fibers with Smooth Surface and Outstanding Knottability* – Rodolfo Cruz-Silva, Shinshu University000384
 11:30 *Measuring Tensile and Shear Moduli in Individual Fibers* – A. M. Rao, Clemson University000373
 12:00 Lunch in Grand Hallway

Afternoon

Regular Sessions

MEETING ROOM 1

Session: Applied Science and Engineering of Fibrous Materials

Session Chair: Dmitry Luzhansky, Donaldson Company, Inc.

- 1:30 *Processing and Mechanical Behavior of Melt-Spun Amorphous Filaments* – Rudolf Hufenus, Empa000366
 1:50 *Analyzing a Co-polymer Aramid Fiber for Use in Soft Body Armor* – Walter McDonough, National Institute of Standards and Technology000373
 2:10 *Extending the Long-term Ballistic Armor Properties of Poly(p-phenylene-2,6-benzobisoxazole) (PBO) Fiber via Supercritical CO₂ Processing* – Jeffrey L. Ellis, Battelle Memorial Institute000354
 2:30 *Investigation on the Effect of Precursors on the Formation of Crystallization for Ultra-high-performance Fibers* – Richard Kotek, North Carolina State University000364
 2:50 *Thermal Comfort Properties of Woven Fabrics Made of Hollow Yarns* – Mehmet Emin Yükksekaya, Usak University00035:

- 3:10 Depart for AMRL Fiber Tower Tour
 4:20 Depart AMRL for Madren Conference Center
5:00 Fiber Society Annual Business Meeting, BellSouth Auditorium: Open to Fiber Society Members Only
6:00 Reception in Grand Hallway; Banquet in Ballroom
Speaker: Dr. John Collier, Florida State University, *The Science and Engineering of Whiskies*

MEETING ROOM 2

Session: Fibrous Biomaterials

Session Chair: Ken Webb, Clemson University

- 1:30 *Wet Electrospinning of Polycaprolactone* – Eva Košťáková, Technical University of Liberec(000) 3
 1:50 *Voluminous Nanofibrous Materials with Incorporated Particles* – Jiří Chvojka, Technical University of Liberec(000) 5
 2:10 *Polyvinylpyrrolidone Capsules as a New Source of Drug Delivery System* – Petr Mikeš, Technical University of Liberec(000)24
 2:30 *Electrospun Divinylsulfone Crosslinked Hyaluronic Acid Fibers for Tissue Engineering Applications* – Laura J. Toth, Drexel University(000) ;
 2:50 *Open*
 3:10 Depart for AMRL Fiber Tower Tour
 4:20 Depart AMRL for Madren Conference Center
5:00 Fiber Society Annual Business Meeting, BellSouth Auditorium: Open to Fiber Society Members Only
6:00 Reception in Grand Hallway; Banquet in Ballroom
Speaker: Dr. John Collier, Florida State University, *The Science and Engineering of Whiskies*

MEETING ROOM 3

Session: Nanostructured and Shaped Fibers

Session Chair: Ayman Abouraddy, University of Central Florida

- 1:30 *Optoelectronic Fibres for Chemical Sensing* – Fabien Sorin, EPFL(000)5;
 1:50 *XanoShear™ Large-scale Fabrication of Functional Nanofibers* – Narendiran Vitichuli, Xanofi, Inc.(000)67
 2:10 *Relative Humidity and Evaporation Rate Effects on Electrospinning: Fiber Diameter and Measurement Implications for Control* – Michael Gevelber, Boston University(000)65
 2:30 *Electrospinning of High-performance Co-polyimide Nanofibers* – Jian Yao, Queen Mary University of London(000)63
 2:50 *Spinneret Design for Multijet Electrospinning* – Yongchun Zeng, Donghua University(000)69
 3:10 Depart for AMRL Fiber Tower Tour
 4:20 Depart AMRL for Madren Conference Center
5:00 Fiber Society Annual Business Meeting, BellSouth Auditorium: Open to Fiber Society Members Only
6:00 Reception in Grand Hallway; Banquet in Ballroom
Speaker: Dr. John Collier, Florida State University, *The Science and Engineering of Whiskies*

MEETING ROOM 4

Session: Nanotube and Graphitic Fibers

Session Chair: Juan José Vilatela, IMDEA Materials Institute

- 1:30 *Microwave-initiated Nano-carbonization* – Xinyu Zhang, Auburn University(000)85
 1:50 *Low-density Carbon Fibers from Polyacrylonitrile-based Precursor Fibers with Honeycomb Structure* – Prabhakar Gulgunje, Georgia Institute of Technology(000)83

- 2:10 *Lignin-based Carbon Fiber from a Novel Organosolv Bioenergy Platform* – Omid Hosseinaei, University of Tennessee00037:
- 2:30 *Facile Fabrication of Double-state Morphology Bacterial Cellulose with Local Orientation Using Potato Starch* – Jingxuan Yang, Donghua University000374
- 2:50 *Electrospinning of PAN Nanofibers Filled with SBA-15 Type Ordered Mesoporous Silica* – Nabyl Khenoussi, ENSISA000378
- 3:10 Depart for AMRL Fiber Tower Tour
- 4:20 Depart AMRL for Madren Conference Center
- 5:00 Fiber Society Annual Business Meeting, BellSouth Auditorium: Open to Fiber Society Members Only**
- 6:00 Reception in Grand Hallway; Banquet in Ballroom**
Speaker: Dr. John Collier, Florida State University, *The Science and Engineering of Whiskies*

Friday, October 25

Morning

- 7:30 Breakfast Bar (ballroom area)

BALLROOM

- 8:30 Plenary Speaker: Alejandro Rey, McGill University, Montreal, Canada
*Liquid Crystalline Fibers, Films, Membranes, and Drops*0006
- 9:10 Break

Keynote Sessions

MEETING ROOM 1

Session: Structure, Mechanics, and Complexity

Session Chairs: Raúl J. Martín-Palma, Pennsylvania State University; Peter Adler, Clemson University

- 9:15 *Magnetic Fiber Actuators Inspired by the Butterfly Proboscis* – Richard E. Groff, Clemson University000438
- 9:45 *Biomimetic Spider Silk Fibers with Natural Mechanical Properties* – Thomas Scheibel, University of Bayreuth00043:
- 10:15 *Mechanics of a Mosquito Bite with Application to Synthetic Needles for Skin Protection* – Melur Ramasubramian, Clemson University000437
- 10:45 Break
- 11:00 *What is the Smallest Diameter Nanowire That May Be Thermally Drawn?* – Ayman F. Abouraddy, University of Central Florida000435
- 11:30 *Tailoring the Placement of Nano-inclusions in Nanofibers via Coaxial Electrospinning: Simulation, Experiments, and Applications* – Yong Lak Joo, Cornell University00043;
- 12:00 Lunch in Grand Hallway

MEETING ROOM 2

Session: Polymer Actuators and Sensors

Session Chair: Tushar Ghosh, North Carolina State University

- 9:15 *High-performance Torsional and Tensile Carbon Nanotube Yarn Composite Muscles* – Ray Baughman, University of Texas, Dallas0003 ;
- 9:45 *Bistable Electroactive Polymer (BSEP) Materials, Actuators, and Applications* – Qibing Pei, UCLA0003: 8
- 10:15 *Electroactive Polymers with Giant Electromechanical Response and Advanced Device Applications* – Qiming Zhang, Pennsylvania State University0003: :
- 10:45 Break

- 11:00 *Thermoplastic Elastomer Systems for Stimulated Shape Change: From Electrical Actuation to Thermal Recovery* – Richard J. Spontak, North Carolina State University~~0000~~3; 3
 11:30 *Optically Active Fibers and Films* – Philip Brown, Clemson University~~0000~~8: 7
 12:00 Lunch in Grand Hallway

MEETING ROOM 3

Session: Wetting of Fibers and Textiles

Session Chair: Hoonjoo Lee, North Carolina State University

- 9:15 *Super-repellent Textiles for the Next Generation of Military Clothing* – Hoonjoo Lee, North Carolina State University~~0000~~83
 9:45 *Pointed Surface Modification of Fabric Structures with Grafting* – Igor Luzinov, Clemson University~~0000~~84
 10:15 *Liquid Repellent Treatments for Military Chemical Protective Clothing—A Brief History of Research at Dstl Porton Down* – Colin R. Willis, Defence Science and Technology Laboratory (Dstl)~~0000~~47:
 10:45 Break
 11:00 *Super-repellent Materials: A Key Interest Area for Canadian CB Defence* – E. J. Scott Duncan, Defence Research and Development Canada~~0000~~48;
 11:30 *Fibrous and Porous Materials with a Hierarchical Pore Structure: Different Kinetics of Liquid Absorption* – Konstantin Kornev, Clemson University~~0000~~85
 12:00 Lunch in Grand Hallway

MEETING ROOM 4

Session: Surface Functionalization of Fibrous Materials

Session Chair: Sergiy Minko, Clarkson University

- 9:15 *Polymeric Surface Modification of Fibers* – Stephen Michielsen, North Carolina State University~~0000~~4:
 9:45 *Infrared Spectroscopy for Studying Nanostructures and Functional Surfaces* – Karsten Hinrichs, ISAS~~0000~~45
 10:15 *Next-generation Fibers* – Satish Kumar, Georgia Institute of Technology~~0000~~48
 10:45 Break
 11:00 *Electrospun Polymer Fibers that Store and Release Nitric Oxide for Wound Healing* – Kenneth J. Balkus, Jr., University of Texas, Dallas~~0000~~46
 11:30 *Field-directed Assembly of Fibrous Structures* – Sergiy Minko, Clarkson University~~0000~~49
 12:00 Lunch in Grand Hallway

Afternoon

Regular Sessions

MEETING ROOM 1

Session: Applied Science and Engineering of Fibrous Materials

Session Chair: Dmitry Luzhansky, Donaldson Company, Inc.

- 1:30 *Mechanical Properties and Failure Processes of Ballistic Single Fibers at High Strain Rates* – Matthew Hudspeth, Purdue University~~0000~~58
 1:50 *Core-Sheath, Slit-surface Electrospinning: Progress Toward a Continuous High-throughput Process* – Toby Freyman, Arsenal Medical, Inc.~~0000~~69
 2:10 *Criteria of Continuous Electrospinning and Mechanism of Jet Breakup at the Nozzle* – Vladislav Vekselman, Clemson University~~0000~~6;
 2:30 Break
 2:45 *Variations in Azimuthal and Axial Convective Heat Transfer from Fibers Exiting a Spinneret* – David Zumbrennen, Clemson University~~0000~~53
 3:05 *Open*
 3:25 *Open*

MEETING ROOM 2

Session A: Heat and Mass Transport Through Fibrous Construction

Session Chair: Jintu Fan, Cornell University

- 1:30 *Prediction of Hydraulic Permeability in Porous Fibrous Materials with a Fractal Approach* – Boqi Xiao, Hong Kong Polytechnic University000029
- 1:50 *Characterization of Permeability of Electrospun Yarns* – Chen-Chih Tsai, Clemson University00002;
- 2:10 *Enhanced Thermal Conductivity in Polymer Nanofibers* – Zhang Jiang, Argonne National Laboratory000033
- 2:30 Break

MEETING ROOM 2

Session B: Smart Textiles in Clothing and the Built Environment

Session Chair: Keith Green and Vincent Blouin, Clemson University

- 2:45 *All-fiber-based Highly Durable Nanogenerator* – Xiao-Ming Tao, Hong Kong Polytechnic University00003; 9
- 3:05 *Phase Change Material Fiber Synthesis* – Claire Poh, Clemson University00003; 7
- 3:25 *Open*
- 3:45 *Open*

MEETING ROOM 3

Session: Wetting of Fibers and Textiles

Session Chair: Hoonjoo Lee, North Carolina State University

- 1:30 *Menisci on Elliptical Fibers* – Daria Monaenkova, Georgia Institute of Technology0000482
- 1:50 *Super-repellent Functional Cotton Textiles* – W. (Marshall) Ming, Georgia Southern University0000486
- 2:10 *Superomniphobic Surfaces for Effective Chemical Shielding* – Anish Tuteja, University of Michigan0000479
- 2:30 Break
- 2:45 *Effect of Nanofibers Diameter on Wettability Properties of PA-6 Electrospun Nanowebs* – Nabyl Khenoussi, ENSISA0000487
- 3:05 *An Evaluation of Woven Structure Factors Impacting Self-cleaning Superoleophobicity* – Nancy Powell, North Carolina State University0000489

MEETING ROOM 4

Session: Textile Product Development

Session Chair: Billie J. Collier, Florida State University

- 1:30 *Smart Textiles: A Novel Concept of Functionalizing Textile Materials* – Nils-Krister Persson, University of Borås0000466
- 1:50 *Transcatheter Textile Heart Valve: Effect of Crimping on Material Performances* – Frederic Heim, ENSISA0000453
- 2:10 *A Braided Structure Based on Helical Auxetic Yarns* – Yang Shen, Auburn University0000472
- 2:30 Break
- 2:45 *Fumigant Activities of Peppermint Oil and Rosemary Oil Against House Dust Mites as Well as Their Antimicrobial Activities* – Sandy W. Daubenmire, University of Georgia000046:
- 3:05 *Dynamic Yarn Pullout in the Out-of-Plane Direction* – Zherui Guo, Purdue University0000474
- 3:25 *Fabrication of Regenerated Cellulose / Nanosilver Fiber Using Ionic Liquid* – Jonathan Chen, University of Texas, Austin000045:
- 3:45 *Fabric Defect Detection Using Image Projection and Dictionary Learning* – Jun Wang, Donghua University0000462

Poster Session

Wednesday, October 23, 5:30 p.m.–7:00 p.m.; Grand Hallway

Presenter	Title
Nancy Allen	<i>Incorporation and Performance of Molecular Polyoxometalates in Fibrous Substrates</i> 000529
Krystal Cadle	<i>The Role the N-Terminal Plays in Spidroin Assembly</i> 0004; 5
Miguel Carvalho	<i>The Designer and Clothing as Therapy in the Treatment of Upper Limb Lymphedema</i> 000527
Nithinart Chitpong	<i>Cellulose Nanofiber Composite Membranes for Water Purification</i> 000537
John Custer	<i>Reconfigurable Diffraction Gratings with Magnetic Nanofibers</i> 0004; 2
DaKeldrick Dismuke	<i>The Effect of Near Space Conditions on Poly(N-vinylcaprolactam) Nanofibers</i> 0004: 2
Yves-Simon Gloy	<i>Spinning and Weaving Technologies for Novel Compostable Biopolymers</i> 000554
Mehdi Kazemimostaghim	<i>Submicron Stable Particles Milled from Silk Fibre</i> 000525
Natasha Khan	<i>Rapid Pull-down Assay Using Capillary-channeled Polymer Fiber Stationary Phases</i> 000533
Jae Hyun Kim	<i>Single PPTA Fiber Tensile Properties from Quasi-static and High Strain Rate Tests</i> 0004: 8
Ben Krichman	<i>Mullite Matrix Composites via Sol-Gel Infiltration Process</i> 000495
Laura Lange	<i>In Situ Synthesis of a Polyoxometalate-CuBTC Metal Organic Framework on Cellulose and Reactivity</i> 0004; 6
Sheng Yan Li	<i>A Novel Digital Approach for Automatic and Continuous Image Segmentation of Tracer Fiber Image</i> 000543
Xiaosong Liu	<i>Light and Color in Deep Black Coloring of Noncircular Cross-section Polyester Fabrics Using Polarization Image Processing</i> 00054:
Sam Lukubira	<i>Processing of Soy Flour-filled Polyethylene Fibers</i> 00053;
Todd Lyda	<i>Production of Recombinant Spider Dragline Silk Proteins with a Leishmania ratentolae Secretion System</i> 000547
Victor Maximov	<i>Development of Rapid ELSIA Fiber-based Testing System</i> 000548
Elmon Merriman	<i>Hydrolysis and Analysis of Simple Sugars Using Smart Fibers from Subterranean Termites for Biofuel Production</i> 0004: 4
Maryana Nave	<i>Wettability of Tungsten Wire During Electropolishing</i> 000523
Ozgun Ozdemir	<i>Properties of Soy Flour-filled Polyethylene Fibers</i> 000539
Congyue Peng	<i>Fiber Assembly from Recombinant Spider Silk-like Proteins Produced in Transgenic Tobacco</i> 00049;
Nils-Krister Persson	<i>Thermotropic Textile Structures</i> 000535
Laurence Schacher	<i>Development of Nanoweb with Specific Orientation for Biological Application</i> 0004; 9
Nataly Siqueira	<i>Characterization and Cytotoxic Study of Galactomannan-Gelatin Electrospun Nanofibers for Cell Culture Application</i> 00052;
Julie Soukupová	<i>Corona Discharges During Electrospinning Process</i> 0004; 4
Byron Tolbert	<i>Correlation of Mechanical Degradation of Poly(p-phenylene-2,6-benzobisoxazole) (PBO) Fiber with Fluorescence Emission</i> 000497

Byron Tolbert	<i>Study on the Use of Lignin Materials as a Flame Retardant Additive for Textiles</i> 000499
Laura Toth	<i>Chitosan Fiber Scaffolds for Craniofacial Bone Tissue Engineering</i> 0004; 7
Thi Anh Dao Tran	<i>Contribution to the Development of a New Design of Dentist's Gowns: A Case Study of Using Infra-red Technology and Pressure Sensors</i> 000545
Fehime Vatansever	<i>Evaluation of Wicking in Polymer Grafted PET Fabrics</i> 0004: 6
Lucie Vysloužilová	<i>Increase the Productivity of Coaxial Electrospinning</i> 0004; ;
Yuen Shing Wu	<i>Study of Microclimate Volume Effect on Clothing Thermal Insulation and Evaporative Resistance</i> 000552
Jian Zhou	<i>Development of Real-time Inspection Platform for Fabric Quality Assurance</i> 0004: :