

# **The Fiber Society Fall Meeting and Technical Conference 2015**

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28-30 October 2015

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## Wednesday, October 28

- 7:00 Registration and Continental Breakfast, Hunt Library, Duke Progress Energy Hall, 2<sup>nd</sup> Floor, Room A
- 8:00 Welcoming Remarks and Announcements, Room D *Xiangwu Zhang, North Carolina State University*  
*David Hinks, Interim Dean, College of Textiles, North Carolina State University*  
*Xungai Wang, President, The Fiber Society*
- 8:20– **Keynote Speaker:** Satish Kumar, School of Materials Science and Engineering, Georgia Institute of Technology, *Recent Developments in Carbon and Polymer Nanocomposite Fibers* 3
- 9:00– **Keynote Speaker:** Behnam Pourdeyhimi, North Carolina State University, College of Textiles, The Nonwovens Institute, *Latest Developments in Micro- and Nanofiber Nonwovens* 5
- 9:40 **Break, Room A**

### Morning Session

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	<b>Session: Fiber Formation, Structure, and Properties I</b> <i>Chair, Gang Sun, University of California-Davis</i>	<b>Session: Natural Fibers</b> <i>Chair, Xungai Wang, Deakin University</i>	<b>Session: Testing and Characterization</b> <i>Chair, Michael Ellison, Clemson University</i>
10:00	<i>Twenty Years of Industrial Fiber Science Research and Development</i> 19 <u>Glen Simmonds</u> , Dupont	<i>Investigation on Moisture Transfer Characteristics of Wild Antheraea pernyi and Domestic Bombyx mori Silk Cocoon Walls</i> 35 <u>Xing Jin</u> , Jin Zhang, Xungai Wang, Deakin University	<i>Multiperspective Measurement of Yarn Hairiness Using Mirrored Images</i> 49 Lei Wang <sup>1,2</sup> , Wenbin Ouyang <sup>1</sup> , Weidong Gao <sup>2</sup> , <u>Bugao Xu</u> <sup>1,2</sup> , <sup>1</sup> University of Texas-Austin, <sup>2</sup> Jiangnan University
10:20	<i>High-Tenacity PTT Fibers by HIB Process</i> 21 <u>Mesbah Najafi</u> , Richard Kotek, North Carolina State University	<i>Synthesis of Silver Nanoparticles Using Bombyx mori Silk Fibroin</i> 37 <u>Sangappa Yallapa</u> <sup>1,2</sup> , Youjiang Wang <sup>2</sup> , <sup>1</sup> Mangalore University, <sup>2</sup> Georgia Institute of Technology	<i>Characterizing Steam Penetration Through Thermal Protective Fabric Materials</i> 51 Sumit Mandal <sup>1</sup> , <u>Guowen Song</u> <sup>2</sup> , <sup>1</sup> University of Alberta, <sup>2</sup> Iowa State University
10:40	<i>Gel Spinning of High-Strength UHMWPE Fibers with Low Molecular Weight Polybutene as an Oligomer Solvent</i> 23 Xudong Fang, Tom Wyatt, <u>Donggang Yao</u> , Georgia Institute of Technology	<i>Oil Spill Cleanup by Hydrophobic Natural Fiber Assemblies</i> 39 Shengbin Cao <sup>1,2</sup> , <u>Guangbiao Xu</u> <sup>1</sup> , Ting Dong <sup>1</sup> , Xinhou Wang <sup>1</sup> , <sup>1</sup> Donghua University, <sup>2</sup> Shanghai Dianji University	<i>A Novel Method for Measuring In-Plane Liquid Dynamic Transport in the Fabric</i> 53 W.G. Sun, X.X. Sun, <u>Xinhou Wang</u> , Donghua University
11:00	<i>Can a Fluid Oscillator Modulate Fluid-Core Fiber Structure?</i> 25 <u>Manfred Heuberger</u> <sup>1</sup> , L. Gottardo <sup>1</sup> , M. Dressler <sup>2</sup> , R. Hufenus <sup>1</sup> , <sup>1</sup> Empa, <sup>2</sup> University of Massachusetts-Amherst	<i>Wettability of Flax Yarns</i> 41 Z. Cheng, C.A. Fuentes, A.W. Van Vuure, <u>David Seveno</u> , KU Leuven	<i>Characterization of Fabric-to-Fabric Friction Coefficient with Kawabata Evaluation System: Application to Medical Compressions Bandages</i> 54 E. Benoist <sup>1</sup> , F. Chassagne <sup>2,3</sup> , <u>Laurence Schacher</u> <sup>1</sup> , R. Convert <sup>2</sup> , R. Seawright <sup>1</sup> , <sup>1</sup> ENSISA, <sup>2</sup> Thuasne, <sup>3</sup> CIS-EMSE
11:20	<i>Fabrication of Helical Fibers via Melt Blowing</i> 27 Huihui Wu, Xiaohua Meng, <u>Yongchun Zeng</u> , Donghua University	<i>Accelerated Weathering of Degradable Mulches Used in Cropping Systems</i> 43 <u>Karen Leonas</u> , North Carolina State University	open

11:40	<i>Effects of Thermal and Rheological Properties of Two Immiscible Polymers on the Interfaces in Bicomponent Melt Spinning Fibers</i> 29 <u>Esmā Ayad</u> <sup>1,2,3</sup> , Aurélie Cayla <sup>2,3</sup> , François Rault <sup>2,3</sup> , Anne Gonthier <sup>1</sup> , Mathieu Coquelle <sup>1</sup> , Thierry LeBlan <sup>1</sup> , Christine Campagne <sup>2,3</sup> , Eric Devaux <sup>1,2,3</sup> , <sup>1</sup> CETI, <sup>2</sup> ENSAIT-GEMTEX, <sup>3</sup> Université Lille Nord de France	<i>Nanocellulose for Functional Surface Modification and Coatings on Textile Fabrics</i> 45 <u>Yunsang Kim</u> , Eliza Lee, Lauren Tolbert, Raha Saremi, Ian Hardin, Suraj Sharma, Sergiy Minko, University of Georgia	open
12:00	<i>Fibers and Nonwovens from Long Carbon Nanotubes: Process, Structure, and Applications</i> 31 <u>Michael Jaffe</u> , New Jersey Institute of Technology	open	open

12:20 **Lunch, Convocation Center, College of Textiles, Room 2225; Poster Setup (Atrium, College of Textiles)**

### Afternoon Session

1:30–2:45	<b>Student Paper Competition</b> <ul style="list-style-type: none"> <li>•Fei Wang, Hong Kong Polytechnic University, <i>Soft Pressure Sensors for Smart Protective Clothing Against Impact Loading</i></li> <li>•Yunshen Cai, Boston University, <i>Analysis of Bending Region Physics in Determining Electrospun Fiber Diameter: Role of Relative Humidity on Evaporation and Force Balance</i></li> <li>•Hey-sang Kim, Seoul National University, <i>Effect of Biaxial Tensile Strain on the Superhydrophobicity of Rayon Knitted Fabrics</i></li> </ul>	<b>Room: D</b>	<b>Chair: Glen Simmonds</b>
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2:45 **Break, Room A**

	<b>Room: D</b>	<b>Room: C</b>	<b>Room: B</b>
	<b>Session: Fiber Composites</b> <b>Chair, Philip Bradford, North Carolina State University</b>	<b>Session: Fibers for Biomedical Applications</b> <b>Chair, Martin King, North Carolina State University</b>	<b>Session: Textile/Apparel Marketing and Management</b> <b>Chair, Yingjiao Xu, North Carolina State University</b>
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3:40	<i>Application of Polyetherimide in Automotive Body Parts with Class-A Surface and Thermal Stress</i> 63 <u>Inga Noll</u> , R. Brüll, N. Vestweber, G. Seide, T. Gries, RWTH Aachen	<i>Smart Wound Dressing Fibers for Detecting Bacterial Infection via Colorimetric Changes</i> 78 A.K.M. Mashud Alam, Pamela Yapor, Melissa Reynolds, <u>Yan Vivian Li</u> , Colorado State University	<i>Logistics of U.S. Carpet Collection and Recycling</i> 91 Iurii Sas, <u>Kristin Thoney-Barletta</u> , Jeffrey Joines, Russell King, North Carolina State University
4:00	<i>Investigation on Adhesion and Interphase of Glass Fiber/Thermoplastic Composites</i> 65 C.A. Fuentes Rojas <sup>1</sup> , E. Van Santfoort <sup>1</sup> , A. Delcorte <sup>2</sup> , C. Dupont-Gillain <sup>2</sup> , D. Seveno <sup>1</sup> , A.W. Van Vuure <sup>1</sup> , <sup>1</sup> KU Leuven, <sup>2</sup> Université Catholique de Louvain	<i>Uric Acid-Releasing Motor Neuron-Biocompatible Electrospun Fibrous Mats for Treatment of Spinal Cord Injury</i> 80 Reva Street <sup>1</sup> , Frank Kung <sup>2</sup> , Laura Beringer <sup>1</sup> , Daniel Amchin <sup>1</sup> , Bonnie Firestein <sup>2</sup> , Caroline Schauer <sup>1</sup> , <sup>1</sup> Drexel University, <sup>2</sup> Rutgers University	<i>Exploring Generation Y Consumers' Consumption of Fitness Clothing: A Means-End Chain Approach</i> 93 <u>Katelyn Patrick</u> , Yingjiao Xu, North Carolina State University
4:20	<i>Sol-Gel Thin Film Formation on Silicon Substrates with Nanofiber/Rods</i> 67 <u>Zhaoxi Chen</u> , Konstantin Kornev, Igor Luzinov, Fei Peng, Clemson University	<i>Heart Valve Leaflets from Semi-Elastic Composite Fabric</i> 82 <u>Frederic Heim</u> <sup>1</sup> , Antoine Vaesken <sup>1</sup> , Nabil Chakfe <sup>2</sup> , <sup>1</sup> ENSISA, <sup>2</sup> Geprovax Hôpitaux	<i>Exploring Taiwanese College Students' Perception Toward Fast Fashion: Brand Personality Approach</i> 95 Jin Su <sup>1</sup> , Aihwa Chang <sup>2</sup> , <u>Yingjiao Xu</u> <sup>3</sup> , <sup>1</sup> Indiana University of Pennsylvania, <sup>2</sup> National Chengchi University, <sup>3</sup> North Carolina State University
4:40	<i>Failure Analysis of Open-Architecture Composite Structures Under Compression</i> 69 Yang Shen <sup>1</sup> , Roy Broughton <sup>1</sup> , David Beale <sup>1</sup> , Winfred Foster <sup>1</sup> , David Branscomb <sup>2</sup> , <u>Sabit Adanur</u> <sup>1</sup> , <sup>1</sup> Auburn University, <sup>2</sup> Highland Composites	<i>Coalesced Poly(<math>\epsilon</math>-caprolactone) Fibers are Stronger</i> 83 <u>Alper Gurarslan</u> , Yavuz Caydamli, Jialong Shen, Alan Tonelli, North Carolina State University	open
5:00	<i>Strain and Damage Sensing in Composites via Embedded CNT Sheets</i> 71 <u>Karim Aly</u> , Ang Li, Philip Bradford, North Carolina State University	<i>New Approach for Melanoma Skin Cancer Controlled-Releasing Drugs for Neutron Capture Therapy: A Review</i> 84 <u>Lucas Naves</u> <sup>1,2</sup> , L. Almeida <sup>1</sup> , <sup>1</sup> University of Minho, <sup>2</sup> CAPES Foundation	open

### *Evening Session*

5:30–7:30	<b>Poster Session and Reception</b> Atrium, College of Textiles
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## Thursday, October 29

- 7:00 Continental Breakfast, Hunt Library, Duke Progress Energy Hall, 2<sup>nd</sup> Floor, Room A
- 8:00–**Plenary Speaker:** Xungai Wang, Deakin University, *Natural Fibre Research: Impact Factor Versus Factual Impact* 9
- 8:30–**Plenary Speaker:** Saad Khan, North Carolina State University, *Nanofibers as Functional Biomaterials: From Biocatalysis to Drug Delivery* 11
- 9:00 **Break, Room A**

### *Morning Session*

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9:20	<i>Improving Fibers via Processing From or With Their Inclusion Compounds</i> 99 A. Gurarslan, J. Shen, Y. Caydamli, G. Narayanan, B.S. Gupta, <u>Alan Tonelli</u> , North Carolina State University	<i>Advanced Manufacturing Process for Producing Nanofiber Yarns</i> 117 <u>Alexis Carpenter</u> <sup>1</sup> , Charles Gause <sup>1</sup> , Lifeng Zhang <sup>2</sup> , Qun Mao <sup>1</sup> , Ajit Kelkar <sup>2</sup> , Chryssa Hopper, <sup>1</sup> AxNano, <sup>2</sup> North Carolina A&T State University	<i>Wet-Spinning Fibers for Supercapacitor Energy Storage</i> 131 Jose Garcia-Torres, Daniel Reid, Robert Slade, <u>Carol Crean</u> , University of Surrey
9:40	<i>Copolyarmid Synthesis and Wet Spinning</i> 101 Joel Barden, <u>Phil Brown</u> , Clemson University	<i>In-Situ Crosslinked and Highly Carboxylated Poly(vinyl alcohol) Nanofibrous Membranes for Efficient Adsorption of Proteins</i> 119 Xueqin Wang, Jianyong Yu, Bin Ding, <u>Jianlong Ge</u> , Donghua University	<i>Electrochemical Performance of Electrospun <math>\alpha</math>-Fe<sub>2</sub>O<sub>3</sub>/C Nanofibers as Anodes for Lithium-Ion Batteries</i> 133 <u>Jiadeng Zhu</u> , Yao Lu, Chen Chen, Samuel Jasper, Xiangwu Zhang, North Carolina State University
10:00	<i>Properties of Novel Blend Biofibers from Cellulose and Collagen</i> 102 Ramiz Boy, <u>Richard, Kotek</u> , North Carolina State University	<i>The Effect of Pyrrole Amount on the Diameter of Poly(acrylonitrile-co-itaconic acid)/Polypyrrole Nanofibers</i> 121 Havva Başkan, <u>Hale Karakaş</u> , Sezai Saraç, Istanbul Technical University	<i>Electrospun PVDF Nanofibers and PP Nonwoven Fabric Composite as Lithium-Ion Battery Separator</i> 135 <u>Chen Chen</u> , Yao Lu, Kun Fu, Xiangwu Zhang, North Carolina State University
10:20	<i>Highly Conductive Nylon-6 Fiber Mats via Low-Temperature Atomic Layer Deposition of Metallic Platinum Using Trimethyl(methylcyclopentadienyl) platinum (IV) and Ozone</i> 104 <u>Zachary Mundy</u> , Saad Khan, Gregory Parsons, North Carolina State University	<i>Influence of Surfactants on Fouling of Electrospun Nylon Membranes During Separation of Oil-in-Water Emulsions</i> 122 <u>Yi-Min Lin</u> , Gregory Rutledge, Massachusetts Institute of Technology	<i>Preparation of Multifunctional High Surface Area Electrodes via Binder-Free Nanoparticle Coatings on Fibrous Structures</i> 137 <u>Jennifer Leary</u> , Benoit Maze, Behnam Pourdeyhimi, North Carolina State University
10:40	<i>From Fibril to Yarn: A Mathematical Model for the Prediction of the Tension of a Twisted Monofilament Yarn</i> 106 <u>Wei Huang</u> , Jun Wang, Donghua University	<i>Hierarchical Porous Carbon Nanofibrous Membranes with Enhanced Mechanical Properties for Effective Adsorption of Proteins</i> 124 <u>Jianlong Ge</u> , Jianyong Yu, Bin Ding, Donghua University	<i>Fiber-Based Energy Storage</i> 139 <u>Daniel Reid</u> , Robert Slade, Carol Crean, University of Surrey
11:00	<i>Improving Thermal Shock Resistance of Polypropylene (PP) Fibers and Yarns by Reinforcing with Talc Microparticles</i> 108 <u>Mevlüt Taşcan</u> , Serkan Nohut, Ibrahim Tarakçı, Filiz Bozer, Zirve University	<i>Electrochemical Impedance Study of Poly (acrylonitrile-co-itaconic acid)/PEDOT Nanofibers</i> 126 <u>Havva Başkan</u> , Hale Karakaş, Sezai Saraç, Istanbul Technical University	<i>A Combination Air, Water, and Thermal Barrier for the External Building Envelope</i> 140 <u>Patrick Young</u> , DuPont Building Innovations

11:20	<i>Photo-Aging of Modified PET-Based Model Compounds</i> 110 <u>Hammad Cheema</u> <sup>1</sup> , Erol Yildirim <sup>1</sup> , Kiarash Arangdad <sup>1</sup> , Christopher Burk <sup>2</sup> , Curt Clevens <sup>2</sup> , Andrew Detwiler <sup>2</sup> , Renzo Shamey <sup>1</sup> , Melissa Pasquinelli <sup>1</sup> , Harold Freeman <sup>1</sup> , Ahmed El-Shafei <sup>1</sup> , <sup>1</sup> North Carolina State University, <sup>2</sup> Eastman Chemical Company	<i>Nanofibrous Materials: Controllable Fabrication, Hierarchical Structure, and Multifunctionality</i> 127 <u>Bin Ding</u> , Donghua University	<i>Graphene-Embedded Carbon Nanofibers Decorated with Surface Platinum Nanoneedles for Higher Efficiency Dye-Sensitized Solar Cells</i> 142 <u>Alex Aboagye</u> <sup>1</sup> , Hytham Elbohy <sup>2</sup> , Sudhan Sigdel <sup>2</sup> , Qiquan Qiao <sup>2</sup> , Lifeng Zhang <sup>1</sup> , <sup>1</sup> North Carolina A&T State University, <sup>2</sup> South Dakota State University
11:40	<i>Dip Coating of Fibers by Polymer Solutions</i> 111 <u>Zhao Zhang</u> , Fei Peng, Igor Luzinov, Konstantin Kornev, Clemson University	open	open
12:00	<i>Successful Preparation of Syndiotactic Rich Poly(acrylonitrile) by Solid State Polymerization Using Zeolites</i> 113 <u>Masatomo Minagawa</u> <sup>1</sup> , Yusuke Nakano <sup>2</sup> , Jun Yatabe <sup>3</sup> , Nobuhiro Sato <sup>4</sup> , Tomochika Matsuyama <sup>4</sup> , <sup>1</sup> Dream-Create-Laboratories, <sup>2</sup> Yamagata University, <sup>3</sup> Teikyo University of Science, <sup>4</sup> Kyoto University	open	open
12:20	<b>Lunch, Convocation Center, COT, Room 2225</b>		

### *Afternoon Session*

- 1:30– **Plenary Speaker:** Rudolf Hufenus, Empa, *Liquid Core Melt-Spun Fibers* 13  
2:00  
2:00– **Plenary Speaker:** Orlin Velev, North Carolina State University, *Massively Scalable Fabrication of Polymer Nanofibers in Sheared Liquid-Liquid Systems: Principles and Capabilities* 15  
2:30  
2:30 **Break, Room A**

	<b>Room: D</b>	<b>Room: C</b>	<b>Room: B</b>
	<b>Session: Nanofibers by Methods Other Than Electrospinning Chair, Mataz Alcoutlabi, University of Texas-Pan American</b>	<b>Session: Dyeing and Finishing Chair, Ahmed El-Shafei, North Carolina State University</b>	<b>Session: Fashion and Costume Chair, Bhuvnesh Goswami, Clemson University</b>
2:50	<i>Fibers from Single and Mixed Waste Streams Using Melt Centrifugal Spinning</i> 147 <u>Nicole Zander</u> , Daniel Sweetser, Daniel Cole, United States Army Research Laboratory	<i>Catalytic Mechanism of Salts in Reactions Between Polycarboxylic Acids with Cotton Fabrics</i> 161 Bolin Ji <sup>1,2</sup> , Cunyi Zhao <sup>2</sup> , Kelu Yan <sup>1</sup> , <u>Gang Sun</u> <sup>1,2</sup> , <sup>1</sup> Donghua University, <sup>2</sup> University of California-Davis	<i>Zero Waste to Zero Waste Garments</i> 175 Andre West, <u>Sanjaykumar Patil</u> , North Carolina State University
3:10	<i>Preparing Binder-Free Electrodes for Electric Double-Layer Capacitors via a Novel Centrifugal Spinning Approach</i> 149 <u>Yao Lu</u> , Chen Chen, Xiangwu Zhang, North Carolina State University	<i>Updates on the Challenges and Solutions to Commercialization of Preparing and Dyeing of Cationic Cotton</i> 163 <u>Matthew Farrell</u> , Cotton Incorporated	<i>Fashion vs. Fit: Preferences of Plus-Size Females</i> 177 <u>Skyla Staton</u> , Cynthia Istook, North Carolina State University

3:30	<i>Touch-Spinning and Magnetospinning of Nano- and Microfibers</i> 151 Alexander Tokarev <sup>1</sup> , D. Asheghali <sup>1</sup> , I.M. Griffiths <sup>2</sup> , O. Trotsenko <sup>1</sup> , A. Gruzd <sup>1</sup> , X. Lin <sup>1</sup> , H.A. Stone <sup>3</sup> , <u>Sergiy Minko</u> <sup>1</sup> , <sup>1</sup> University of Georgia, <sup>2</sup> University of Oxford, <sup>3</sup> Princeton University	<i>Dyeing of Anionized Cotton with Basic Dyes</i> 165 <u>Sha Fu</u> , Peter Hauser, North Carolina State University	<i>A Study on the Relationship Between the Wing Tension of a Brassiere and Under-Bust Pressure</i> 179 <u>Yu Liu</u> <sup>1</sup> , Shixia Li <sup>1</sup> , Jianping Wang <sup>1</sup> , Cynthia Istook <sup>2</sup> , <sup>1</sup> Donghua University, <sup>2</sup> North Carolina State University
3:50	<i>Preparation, Functionalization, and Application of Thermoplastic Nanofibers</i> 153 Mufang Li, Qinghua Zhao, Qihao Guo, <u>Dong Wang</u> , Wuhan Textile University	<i>Comparative Assessment of Performance on the PET Denim Garment with Laser Bleaching and Enzymatic Bleaching Methods</i> 167 Wei Du <sup>1</sup> , Tingting Li <sup>1</sup> , Zhenglei He <sup>1</sup> , Danying Zuo <sup>1</sup> , Hantao Zou <sup>1</sup> , <u>Xungai Wang</u> <sup>1,2</sup> , Changhai Yi <sup>1</sup> , <sup>1</sup> Wuhan Textile University, <sup>2</sup> Deakin University	<i>FYT Jeans: Ergonomically Designed Jeans for Active and Sedentary Lifestyles</i> 181 <u>Miguel Carvalho</u> <sup>1</sup> , Elazer Edelman <sup>2</sup> , Sara Bragança <sup>1</sup> , Liliana Fontes <sup>1</sup> , <sup>1</sup> University of Minho, <sup>2</sup> Massachusetts Institute of Technology
4:10	<i>Production and Applications of Carbon Nanotube Sheet Fabrics</i> 155 <u>Philip Bradford</u> , North Carolina State University	<i>Fine Dyeable Polypropylene Fiber from Polypropylene/Polystyrene Nano-Garamite Blend</i> 169 <u>Long Chen</u> , Dan Pan, Kangwei Deng, Zongyi Qin, Meifang Zhu, Donghua University	open
4:20	<i>Forcespinning of Nanofibers and Their Applications in Lithium-Ion Batteries</i> 157 <u>Mataz Alcoutlabi</u> , Victor Agubra, David De-la-Garza Gallego, University of Texas-Pan American	<i>Digital Textile Printing to Support Walmart Reshoring</i> 171 <u>Lisa Parillo Chapman</u> , Yi Ding, Harold Freeman, Renzo Shamey, North Carolina State University	open
4:50–5:30	<b>Fiber Society Annual Business Meeting: Open to Fiber Society Members Only</b> Hunt Library, 2 <sup>nd</sup> Floor, Room D		

5:30–6:00 Buses Load from Hunt Library for Trip to Alumni Center

6:00–6:30 Reception, Alumni Center

6:30 Banquet

- Speaker: Willie Nelms, *America's Music Down to Its Roots*
- Awards Ceremony

Buses Load for Shuttle Route Hotels

## Friday, October 30

7:00 Continental Breakfast, Hunt Library, Duke Progress Energy Hall, 2<sup>nd</sup> Floor, Room A

8:00–8:30 **Plenary Speaker:** Liangbing Hu, University of Maryland, *Cellulose Nanofibers for Electronics, Photonics, and Energy Storage* 16

8:30 **Break, Room A**

	Room: D	Room: C	Room: B
	<b>Session: Yarns and Fabrics: Processes, Structures, and Properties</b> <i>Co-Chairs, William Oxenham &amp; Abdel-Fattah Mohamed Seyam, North Carolina State University</i>	<b>Session: Smart Polymers, Fibers, and Textiles</b> <i>Co-Chairs, Tushar Ghosh, North Carolina State University, &amp; Dong Wang, Wuhan Textile University</i>	<b>Session: Fibers for Defense and Homeland Security</b> <i>Chair, Eugene Wilusz, U.S. Army Natick RDE Center</i>



8:45	<i>Yarn Tension in the Ring Spinning Process</i> 185 <u>Urs Meyer</u> , ETH Zurich	<i>Molecular Design of Shape-Memory Polymer Fibers That are Thermally Responsive</i> 207 <u>Melissa Pasquinelli</u> , Syamal Tallury, Behnam Pordeyhimi, Richard Spontak, North Carolina State University	<i>Development of Inherently Super-Nonwetting Fibers and Fabrics</i> 225 <u>Quoc Truong</u> <sup>1</sup> , Walter Zukas <sup>1</sup> , Elizabeth Welsh <sup>1</sup> , Peter Stenhouse <sup>1</sup> , Phil Brown <sup>2</sup> , Nicole Hoffman <sup>2</sup> , Joey Mead <sup>3</sup> , Carol Barry <sup>3</sup> , Phil Mooney <sup>3</sup> , John Shearer <sup>3</sup> , Artee Panwar <sup>3</sup> , Bryan Koene <sup>4</sup> , Rebecca Martin <sup>4</sup> , Robert Cohen <sup>5</sup> , Gareth McKinley <sup>5</sup> , Justin Kleingartner <sup>5</sup> , Dayong Chen <sup>5</sup> , <sup>1</sup> U.S. Army Natick Soldier RDE Center, <sup>2</sup> Clemson University, <sup>3</sup> University of Massachusetts-Lowell, <sup>4</sup> Luna Innovations, Inc., <sup>5</sup> Massachusetts Institute of Technology
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12:00	<i>A Review of Structure Modelling of Functional Nonwovens</i> 202 <u>Memiş Acar</u> , Loughborough University	open	<i>A Second Skin for Responsive Chemical Biological Protection</i> 240 <u>Eugene Wilusz</u> <sup>1</sup> , Ramanathan Nagarajan <sup>1</sup> , Paola d'Angelo <sup>1</sup> , Matthew Helgeson <sup>2</sup> , Bradley Olsen <sup>3</sup> , Alan Hatton <sup>3</sup> , Lev Bromberg <sup>3</sup> , Jeffery Owens <sup>4</sup> , David McGarvey <sup>5</sup> , William Creasy <sup>6</sup> , <sup>1</sup> U.S. Army Natick Soldier RDE Center, <sup>2</sup> University of California-Santa Barbara, <sup>3</sup> Massachusetts Institute of Technology, <sup>4</sup> Air Force Civil Engineering Center, <sup>5</sup> Edgewood Chemical Biological Center, <sup>6</sup> Leidos Corp.
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## Poster Session

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