

# **The Fiber Society Fall Meeting and Technical Conference 2016**

Ithaca, New York, USA  
10 – 12 October 2016

ISBN: 978-1-5108-3937-3

**Printed from e-media with permission by:**

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



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# Monday, October 10

## Morning

7:00 Registration and Breakfast: College of Human Ecology (CHE) Commons

### **MARTHA VAN RENSSELAER HALL (MVR), G71**

8:00 Welcome and Opening Remarks *Margaret Frey and Juan Hinestroza, Cornell University, Co-chairs*  
*Alan Mathios, The Rebecca Q. and James C. Morgan Dean of the College of Human Ecology*  
*Kostya Kornev, President, The Fiber Society*

8:20 Keynote Speaker: Uli Wiesner, Spencer T. Olin Professor of Engineering, Materials Science and Engineering, Cornell University, *Self-assembly-based Functional Nanomaterials and Fibers* 1

9:00 Break

### **MARTHA VAN RENSSELAER HALL (MVR), G71**

#### **Session: Knit Modeling**

**Session Chair: Antonios Kontsos, Drexel University**

9:10 *Physics-based Modeling of Knitted Textile Behavior* – Antonios Kontsos, Drexel University 6

9:30 *3D Modeling of Knittable Structures with Stitch Meshes* – Cem Yuksel, University of Utah 7

9:50 *Modeling Methodologies for Knitted Shape Memory Alloy Textiles* – Julianna Abel, University of Minnesota 8

10:10 *Modeling of Knitted Structures at Fiber/Filament Level: Tasks and Some Possible Solutions* – Yordan Kyosev, Hochschule Niederrhein 9

10:30 Break

10:40 *Efficient Simulation of Fabric at the Yarn Level* – Gabriel Cirio, URJC Madrid 10

11:00 *Nonintrusive Determination of Fibre Segment Orientation Distribution of Primary Nonwoven Structures* – Muhammad Tausif, University of Leeds 11

11:20 *Fiber Segment Orientation and Crossing in Nonwovens from X-ray Micro-computed Tomographic Data* – Steven Keller, Miami University 12

11:40 open

12:00 Lunch: College of Human Ecology (CHE) Commons

### **MARTHA VAN RENSSELAER HALL (MVR), G73**

#### **Session: Green Materials and Natural Fibers**

**Session Chair: Anil Netravali, Cornell University**

9:10 *Manufacturing Cellulose and Chitin Fibres Using Ionic Liquids as Environmentally Benign Solvents* – Sameer Rahatekar, University of Bristol 14

9:30 *Fiber Orientation Control in Cellulose Nanofiber-reinforced Green Nanocomposites* – Hitoshi Takagi, Tokushima University 15

9:50 *Development and Characterization of Biobased Polymers and Natural Fiber Composites* – Mahesh Hosur, Tuskegee University 16

10:10 open

10:30 Break

10:40 *Cellulose Nanofiber Extraction from Grasses by Kitchen Blender and Ultrasonication* – Antonio Nakagaito, Tokushima University 17

11:00 *Fully Bio-based Self-healing Composites Using Microcapsules* – Joo Ran Kim, Cornell University 18

11:20 *Biologically Derived Nanofibers for Novel Functions* – You-Lo Hsieh, University of California Davis 19

11:40 open

12:00 Lunch: College of Human Ecology (CHE) Commons

## **MARTHA VAN RENSSELAER HALL (MVR), 157**

### **Session: Modeling Smart Textiles and Processes**

#### **Session Chair: Chunhui Xiang, Iowa State University**

- 9:10 *Foldable Textile-based Devices Using Conductive Fibers* – Matsumi Kimura, Shinshu University 29
- 9:30 *Dielectric Soft Textile Polymers with Smart Functions: Electro-mechanical, Mechano-electric, Electro-optical* – Toshihiro Hirai 30
- 9:50 *Adaptive Washing Strategy for Overflow Rinsing* – Warren Jasper/Melih Gunay, North Carolina State University/Akdeniz University 31
- 10:10 *open*
- 10:30 Break
- 10:40 *Influence of the Wear of Carbon Nanotubes Grafted on Carbon Fibers* – Glaire Guignier, ENSISA 32
- 11:00 *Capillary Race in Fibrous Constructs* – Dahua Shou, Cornell University 33
- 11:20 *open*
- 12:00 Lunch: College of Human Ecology (CHE) Commons

## **Afternoon**

## **MARTHA VAN RENSSELAER HALL (MVR), G71**

### **Session: Graduate Student Paper Competition**

#### **Session Chair: Juan Hinestroza, Graduate Student Paper Competition Chair**

- 1:00 Kerianne Dobosz, University of Massachusetts Amherst – *Electrospun Nanofiber Morphology Enhances the Flux and Antifouling Performance of Ultrafiltration Membranes* N/A
- 1:25 Maïke Quandt, EMPA – *Continuous Melt-extrusion of Touch-sensitive Polymer Optical Fibers* N/A
- 1:50 Larissa Shepherd, Cornell University – *Increasing Stability of Biotin Functionalized Electrospun Fibers for Biosensor Applications* N/A
- 2:15 Break

## **MARTHA VAN RENSSELAER HALL (MVR), G71**

### **Session: Architecture**

#### **Session Chair: Jenny Sabin, Cornell University**

- 2:30 *The Weaver and the Navy\*: A Concrete/Textile Collaboration* – Ruth Morrow, Queen's University 43
- 2:50 *Couture Construction* – Ruth Morrow/Trish Belford, Queen's University/Ulster University 44
- 3:10 *Thermally Resistant Membrane Enclosures* – Jonathan Knowles, Rhode Island School of Design 45
- 3:30 *Predictability and Pattern Logic in Textile Architecture* – Martin Tamke, Royal Danish Academy of Fine Arts 46
- 3:50 Break

### **Session: Metrology**

#### **Session Chair: Warren Jasper, North Carolina State University**

- 4:00 *Evaluating Sources of Variability in Forensic Fiber Trace Evidence* – Julie Bitter, National Institute of Standards and Technology 48
- 4:20 *Forensic Files: So How Much Blood Was That?* – Stephen Michielsen, North Carolina State University 49
- 4:40 *Characterization of Micron-sized, Bicomponent Islands-in-Sea Fibers Using Various AFM Techniques* – Marion Schelling, Cornell University 50
- 5:00 *Characterization of Mechanical Properties of Micro- and Nanofibers Using Magnetic Probes* – Kostya Kornev, Clemson University 51
- 5:20 *Raman Spectroscopy and Chemometrics Applied to Recycled Polyethylene Terephthalate* – Edmir Silva, Unifi 52
- 6:00 **Banquet: College of Human Ecology (CHE) Commons**  
**Awards Ceremony**  
**Speaker: Dr. Karl Pillemer, Cornell University, *Lessons for Living from the Oldest (and Wisest) Americans***

## **MARTHA VAN RENSSELAER HALL (MVR), G73**

### **Session: Green Materials and Natural Fibers *cont'd***

**Session Chair: Anil Netravali, Cornell University**

- 2:30 *In Situ and Real-time Studies of Cellulose Nanocrystals Orientational Order During Solution Shearing by X-ray Scattering* – Lina Sanchez-Botero 20
- 2:50 *Nanocellulose Functional Coatings on Fabric Surface* – Sergiy Minko, University of Georgia 21
- 3:10 *Impacts of Molecular Size and Affinity of Chemicals in Crosslinking Cotton Fabrics with Polycarboxylic Acids* – Gang Sun 22
- 3:30 *Gel Spinning of Lignin-reinforced Fibers* – Ericka Ford, North Carolina State University 23
- 3:50 Break
- 4:00 *Study of the Wetting Behavior of Micrometer-sized Natural and 3D Printed Natural-like Fibers* – Carlos Fuentes, KU Leuven 24
- 4:20 *Creep of Barkcloth-reinforced Laminar Epoxy Biocomposites* – Samson Rwariire, Technical University of Liberec 25
- 4:40 *Functionalization of Cotton Fiber by Partial Etherification and Self-assembly of Polyoxometalate Encapsulated in  $Cu_3(BTC)_2$  Metal-Organic Framework* – Laura Lange, Invista 26
- 5:00 *“No Waste”: The Development of Sustainable Knitted Clothes Made from PLA Fibers* – Ellen Bendt, Niederrhein University 27
- 5:20 open
- 6:00 **Banquet: College of Human Ecology (CHE) Commons Awards Ceremony**  
**Speaker: Dr. Karl Pillemer, Cornell University, *Lessons for Living from the Oldest (and Wisest) Americans***

## **MARTHA VAN RENSSELAER HALL (MVR), 157**

### **Session: Modeling Smart Textiles and Processes *cont'd***

**Session Chair: Janice R. Gerde, US Customs and Border Protection**

- 2:30 *Mathematical Modeling and Experimental Analysis of Dynamic Yarn Path in the Superconducting Magnetic Bearing-based Ring Spinning Machine* – Mahmud Hossain, Technische Universität Dresden 34
- 2:50 *Effect of Rotor Spinning Parameters on Trash Removal Proficiency* – Huiting Lin, Donghua University 35
- 3:10 *Modeling the Dynamic Behavior of Drafting Process* – Baolong Ma, Donghua University 36
- 3:30 *Heat Transfer Simulation of Fabrics with Heterogeneous Model* – Shen Hua, Kyoto Institute of Technology 37
- 3:50 Break
- 4:00 *Non-local Self-similarity Fabric Defect Detection* – Wai Keung Wong, Hong Kong Polytechnic University 38
- 4:20 *Analysis of Electrospinning Bending Region to Determine Fiber Diameter for Non-aqueous Solutions: Evaporation and Water Absorption* – Yunshen Cai, Boston University 39
- 4:40 *Finite Element Analysis of Effects of the Mesoscale Material Properties on the Mechanical Response of Woven Fabrics* – Ozan Erol, University of Delaware 40
- 5:00 *Determination of Relative Importance for Raw Material of Yarn Using Hybrid GA-TOPSIS Model* – Subhasis Das, Government College of Engineering and Textile 41
- 5:20 open
- 6:00 **Banquet: College of Human Ecology (CHE) Commons Awards Ceremony**  
**Speaker: Dr. Karl Pillemer, Cornell University, *Lessons for Living from the Oldest (and Wisest) Americans***

## Tuesday, October 11 Morning

8:00 Registration and Breakfast: College of Human Ecology (CHE) Commons

### **MARTHA VAN RENSSELAER HALL (MVR), G71**

8:20: Keynote Speaker: Kavita Bala, Computer Science Department, Cornell University, *Modeling and Rendering Virtual Fabrics* 3

9:00 Break

### **MARTHA VAN RENSSELAER HALL (MVR), G71**

#### **Session: Fibrous Materials for Biomedical Applications**

**Session Chair: Minglin Ma, Cornell University**

- 9:10 *Microfabrication with Cotton Candy: Fibers as Sacrificial Templates for Fluidic Systems* – Leon Bellan, Vanderbilt University 54
- 9:30 *Electrostatically Flocked Chitosan Fiber Scaffolds* – Robert Tonndorf, Technische Universität Dresden 55
- 9:50 *Hybrid Electrospun Chitosan-Phospholipids Nanofibers as a Platform for Biomedical Applications* – Ana Mendes, Technical University of Denmark 56
- 10:10 *Growth of Spinal Cord Explants on Electrospun Polyethylenimine-blended Nanofibers* – Reva Street, Drexel University 57
- 10:30 Break
- 10:40 *Put Electrospun Nanofibers to Work for Biomedical Research* – Jingwei Xie, University of Nebraska Medical Center 58
- 11:00 *Hybrid Textile for Heart Valve Prosthesis: In Vitro Assessment of Various Construction Designs* – Amna Amri, ENSISA 59
- 11:20 *Multicomponent Fibers Tailored for Medical Textiles* – Rudolf Hufenus, Empa 60
- 11:40 *Adhering Zwitterions to Electrospun Nanofiber Mats Using Bioglue* – Jessica Schiffman, University of Massachusetts Amherst 61
- 12:00 Lunch: College of Human Ecology (CHE) Commons

### **MARTHA VAN RENSSELAER HALL (MVR), G73**

#### **Session: Nanofibers**

**Session Chair: Yong Joo, Cornell University**

- 9:10 *New Method for Characterization of Oriented Nanofibers* – Neda Shah Hosseini, ENSISA 63
- 9:30 *Study of Mechanical Properties of Electrospun PA-6 Nanowebs and Electrospun PA-6/B Composite as Substitution Membrane for Congenital Diaphragmatic Hernia Treatment* – Elham Mohsenzadeh, ENSISA 64
- 9:50 *Separation and Modeling of Oil-in-Water Emulsions Stabilized by Different Types of Surfactants Using Electrospun Fiber Membranes* – Yi-Min Lin, Massachusetts Institute of Technology 65
- 10:10 open
- 10:30 Break
- 10:40 *Investigation the Long-term Behavior of PAN Nanofiber Yarns* – Kolos Molnár, Budapest University of Technology 66
- 11:00 *From the Synthesis of Polymers to the Fabrication of Smart Nanofibers* – Edurne González, Cornell University 67
- 11:20 open
- 11:40 open
- 12:00 Lunch: College of Human Ecology (CHE) Commons

## **MARTHA VAN RENSSELAER HALL (MVR), 157**

### **Session: Fiber Formation, Structure, and Properties**

#### **Session Chair: Philip Brown, Clemson University**

- 9:10 *Bi-component Fibers for Temperature Adaptive Thermal Insulation* – Stephen Fossey, U.S. Army Natick Soldier RD&E Center 69
- 9:30 *Braided Structure with Negative Poisson's Ratio* – Hong Hu, Hong Kong Polytechnic University 70
- 9:50 *Investigation of Nanoyarn Preparation by Modified Electrospinning Setup* – Ariana Levitt, Drexel University 71
- 10:10 *New Styrenic Block Copolymers for Elastic Nonwoven and Fiber Applications* – Kuitian Tan, Kraton Performance Polymers 72
- 10:30 Break
- 10:40 *Overview of HIB Process for Making High-performance Fibers* – Mesbah Najafi, North Carolina State University 73
- 11:00 *Electrospinning Polyelectrolyte Complex Coacervates into Fiber Mats* – Xiangxi Meng, University of Massachusetts Amherst 74
- 11:20 *Slip-effect Functional Air Filter for Efficient Purification of PM2.5* – Xinglei Zhao, Donghua University 75
- 11:40 *High-performance Electrospun Polyethylene Fibers by Gel-Electrospinning* – Jay Hoon Park, Massachusetts Institute of Technology 76
- 12:00 Lunch: College of Human Ecology (CHE) Commons

## **Afternoon**

## **MARTHA VAN RENSSELAER HALL (MVR), G71**

### **Session: Clothing and Textile Comfort**

#### **Session Chair: Jintu Fan, Cornell University**

- 1:00 *A Novel Female Sweating Thermal Manikin for Thermal Comfort Evaluation* – Jintu Fan, Cornell University 85
- 1:20 *Engineering Design of Knitted Fabrics for Optimal Thermo-physiological Comfort as Well as UV Protection* – Anindya Ghosh, Government College of Engineering and Textile Technology 86
- 1:40 *Chemical Protective Clothing Comfort Performance Study: Comfort and Textile Material Fundamental Properties* – Chunhui Xiang, Iowa State University 87
- 2:00 *Investigation of Value-added Component for Denim Fabrics Based on the Tactile Sensation* – Sachiko Sukigara, Kyoto Institute of Technology 88
- 2:20 *Preliminary Results of an Anthropometric Study with Brazilian Women in Portugal Using the Kinect Body Image System* – Miguel Carvalho/Carla Capelass, University of Minho 89
- 2:40 *A Comparative Analysis for Water Absorption and Transport Test Measurement for Fabrics* – Ka Po Maggie Tang, Cornell University 90
- 3:00 Break
- 3:10 *Study of the Thermal Comfort of Mattress Using Supine Thermal Manikin* – Lun Lou, Cornell University 91
- 3:30 *Children's Apparel for Medical Accommodations: Designed for Use with Pump, Catheter, or Port* – Jessica Estrada, Sam Houston State University 92
- 3:50 *Anthropometric Data Collection of Portuguese Children with Overweight and Obesity* – Miguel Carvalho, University of Minho 93
- 4:10 *Recovering Hydrophilicity of Wrinkle-free Cotton Fabric via Nanoparticle Treatment* – Lihong Lao, Cornell University 94
- 4:30 open
- 4:50 open
- 5:20-6:00 Fiber Society Annual Business Meeting, MVR G71: Open to Fiber Society Members Only.**
- 6:00-7:30 Poster Session and Reception: College of Human Ecology (CHE) Commons**



## **MARTHA VAN RENSSELAER HALL (MVR), G73**

### **Session: Nanofibers and Energy**

#### **Session Chair: Yong Joo, Cornell University**

- 1:00 *Ultralight Nanofiber-assembled Cellular Aerogels with Superelasticity and Multifunctionality* – Gang Sun/Yang Si, University of California Davis 96
- 1:20 *Facile Synthesis of Highly Carboxylated Electrospun Nanofibrous Membranes for Efficient Protein Adsorption* – Qiuxia Fu, Donghua University 97
- 1:40 *Superwetting Hierarchical Porous Silica Nanofibrous Membranes for Oil/Water Microemulsion Separation* – Jichao Zhang, Donghua University 98
- 2:00 *Electrospun Carbon Nanofibers for Electrochemical Biosensing and Energy Storage* – Xianwen Mao, Massachusetts Institute of Technology 99
- 2:20 *Synthesis of Lithium Ion-Sieve Nanoparticles and Evaluation of Li<sup>+</sup> Adsorption* – Kelsey Dean, Colorado State University 100
- 2:40 *open*
- 3:00 *Break*
- 3:10 *Polyacrylonitrile/Polymer-derived Ceramic Co-continuous Nanofiber Membranes via Room-curable Organopolysilazane for Improved Lithium Ion Battery Performance* – Soshana Smith, Axium Nano LLC 101
- 3:30 *Freestanding Nanofiber Electrodes for Supercapacitors and Batteries* – Vibha Kalra, Drexel University 102
- 3:50 *Electrospun Polyacrylonitrile/Polystyrene Nanofibrous Membranes Applied in Protein Through Hydrophobic Force* – Lihuan Wang, Donghua University 103
- 4:10 *In Situ Synthesis of Flexible Hierarchical TiO<sub>2</sub> Nanofibrous Membranes with Enhanced Photocatalytic Activity* – Xiaohui Wu, Donghua University 104
- 4:30 *open*
- 4:50 *open*

**5:20-6:00 Fiber Society Annual Business Meeting, MVR G71: Open to Fiber Society Members Only.**

**6:00-7:30 Poster Session and Reception: College of Human Ecology (CHE) Commons**

## **MARTHA VAN RENSSELAER HALL (MVR), 157**

### **Session: Fiber Formation, Structure, and Properties *cont'd* Session**

#### **Chair: Philip Brown, Clemson University**

- 1:00 *Thermoplastic Coating of Glass Fibres in the Nozzle Drawing Process* – Robert Brüll, RWTH Aachen University 77
- 1:20 *Invention (Recognition) of High-modulus, Low-shrinkage Tire Cord: A Model for the Development of Fiber Structure and Properties* – Michael Jaffe, New Jersey Innovation Institute 78
- 1:40 *Influence of Molecular Orientation on Crystallization Behavior of Poly(ethylene terephthalate) Measured by Fast Scanning DSC* – Takeshi Kikutani, Tokyo Institute of Technology 79
- 2:00 *Touch-spinning and Magnetospinning of Nano- and Microfibers* – Darya Asheghali, University of Georgia 80
- 2:20 *Effect of Crystal Orientation on Cellulose Nanocrystals/Polyvinyl Alcohol-Nanocomposite Fibers Produced by Dry Spinning* – Shikha Shrestha, Purdue University 81
- 2:40 *Studies in Strain-induced Polymer Crystallization: Joys of Uncovering Simple Relationships in Complex Systems* – David Salem, South Dakota School of Mines and Technology 82
- 3:00 *Break*
- 3:10 *Synergistic Reinforcement of Regenerated Silk Fibroin Fiber with Graphene Oxide/Titanium Dioxide Hybrid Filler* – Yaopeng Zhang, Donghua University 83
- 3:30 *open*



**Session: The Fiber Society—A History 116**

**Session Chair: Michael Ellison, Clemson University**

3:50 *Early Fiber Society History Recap and Continuation to 1960s* – Michael Ellison, Clemson University

4:10 *The Textile Research Institute and the Fiber Society: Foundations of Fiber Science Research in the United States* – David Salem, South Dakota School of Mines and Technology

4:30 *TRI, the Fiber Society, and the Gordon Conferences* – Bhuvnesh Goswami, Clemson University

4:50 *Highlights and Personal Recollections, 2001–2007* – Subhash Batra, North Carolina State University

**5:20-6:00 Fiber Society Annual Business Meeting, MVR G71: Open to Fiber Society Members Only.**

**6:00-7:30 Poster Session and Reception: College of Human Ecology (CHE) Commons**

## Wednesday, October 12

### NOTE LOCATION CHANGE: Nevin Center, Cornell Plantations

8:00 Breakfast: Ten Eyck Room

#### **TEN EYCK ROOM**

8:20: Keynote Speaker: Susan Ashdown, Helen G. Canoyer Professor, Fiber Science and Apparel Design, Cornell University, *Why Ready-to-Wear Clothing is Not Ready to Wear: The “Wicked” Design Problem of Clothing Fit* 4

9:00 Break

#### **TEN EYCK ROOM**

**Session: Costume, Fashion, and History**

**Session Chair: Denise Green, Cornell University**

9:10 *Kalamkari Revamping: Traditional vs Conventional Pretreatment Processes* – Geetal Mahajan, Institute of Chemical Technology 106

9:30 *Assessing Fastness Properties of Kalamkari Painted Fabric* – Ritika Jhunjhunwala, Sophia Shree B.K. Somani Memorial Polytechnic 107

9:50 *Interdisciplinary Product Development: Leveraging Fiber and Material Development in Technical Apparel* – Linsey Griffin, University of Minnesota 108

10:10 *Production of Material Culture in Guatemala* – Amanda Denham, Cornell University 109

10:30 Break

**Session: Technical Apparel**

**Session Chair: Huiju Park, Cornell University**

10:40 *Female Breast Shape Classification Based on Analysis of CAESAR 3D Body Scan Data* – Jie Pei, Cornell University 111

11:00 *Adaptive Clothing and Its Application for Female Breast Cancer Patients with Lymphedema* – Grace Jun, Parsons School of Design 112

11:20 *Degradation Mechanisms in Unidirectional UHMWPE Soft Ballistic Inserts* – Zois Tsinas, University of Maryland 113

11:40 *Comparison of Stretch and Recovery Properties of Polyester and Polyamide Knitted Fabrics for Compression Sportswear* – Jawairia Umar Khan, University Agriculture Faisalabad 114

### ***Conference Concludes***

### **Afternoon Tour of the Cornell Science & Apparel Design Facilities (sign-up required)**

1:00 p.m. at the Human Ecology Building, T Level; hosted by Prof. Jintu Fan and Company

## Poster Session

**Tuesday, October 11, 6:00–7:30 p.m., College of Human Ecology (CHE) Commons**

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Olga Urbanek	<i>Charge-assisted Tailoring and Its Effect on Surface Modification of Chitosan Nanofibers</i>	120
James Plaia	<i>Rope Recoil: Analysis and Control Strategy</i>	121
Youngjoo Chae	<i>Toward Accurate Color Prediction of Woven Fabrics: Three-dimensional Structural Modeling</i>	122
Chunhui Xiang	<i>Color and Colorfastness of Nanosilver-treated Cotton by UV Photo Reduction and Chemical Silver Plating Methods</i>	123
Larissa Shepherd	<i>The Physical Aging of Electrospun PLA/PLA-b-PEG Fibers</i>	124
Chelsea Knittel	<i>Crosslinked Poly(vinyl alcohol) Nanofibers and Textiles</i>	125
Mesbah Najafi	<i>Properties of High-tenacity PTT Yarns</i>	126
Nelyan López Pérez	<i>Degradation of High-performance Polymeric Fibers: Effects of Sonication, Humidity, and Temperature</i>	127
Rachael Granberry	<i>Fabric-based Soft Actuators for a Soft Robotic Glove</i>	128
Sanggu Kim	<i>Design and Feasibility of Two-way Actuating SMA Device for Smart Wear</i>	129
Elisa Mayerberger	<i>Electrospinning of Novel Chitosan-MXene Fiber Composite for Antibacterial Bandage Applications</i>	130
Eduarne González	<i>Synthesis, Characterization, and Electrospinning of P(VCL-co-MMA) Biocompatible and Thermoresponsive Polymers</i>	131
Margaret Frey	<i>Electro-optical and Thermal Responsiveness of Liquid Crystal Fiber Arrays</i>	132
Vanessa Sanchez	<i>A Functional Apparel Approach for Soft Exosuit Design</i>	133
Eric Beaudette	<i>Development of New Hockey Gear for Enhanced Neck Laceration Protection</i>	134
Robert Brüll	<i>Using Commingled Yarns Made from Nanomodified Polypropylene and Glass Fibres for Microwave-based Heat Pressing</i>	135
Raha Saremi	<i>Surface Modification of Nanofibrillated Cellulose and Nanocrystalline Cellulose for Textile Coating and Dyeing</i>	136
Ben Greenspan	<i>Development and Testing of a Stitched Stretch Sensor for Measuring Human Movement</i>	137
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Min Xiao	<i>NMR Study of Wrinkle-free Cotton Fabrics Treated with Polypropylene Glycol-di-epoxide and 1,2,3,4-butanetetracarboxylic Acid</i>	139
Marion Schelling	<i>Characterization of Micron-sized, Bicomponent Islands-in-Sea Fibers Using IR-AFM</i>	140
Lina Sanchez-Botero	<i>Synthesis of <math>\alpha</math>-MnO<sub>2</sub> Nanocrystals Using Natural Extracts of Vitis Vinifera Stems and Malus Domestica "Cortland" Apple Peels</i>	141
Inhwan Kim	<i>Characteristics of PU Nanoweb Treated with Ag Nanowire Solution and Exploration as a Strain Sensor</i>	142
Hyunsook Kim	<i>A Comparison of Garment Sleeve Patterns for Korean Women</i>	143
Fangfang Weng	<i>Attachment of Donor-Acceptor Stenhouse Adducts Photochromic Compounds onto Cotton Fabrics</i>	144
Namrata Patil	<i>From Bio-waste to Green Composite Using Non-edible Starch and Modified Sisal Fibers</i>	145
Kolos Molnar	<i>Electrospinning of Polyisobutylene-based Thermoplastic Elastomers and Characterization of the Electrospun Fibers</i>	146
Ghazal Shoorideh	<i>Water-based Electrospinning as a Facile and Scalable Method to Directly Deposit PVA-Silicon-Graphene Nanoribbon Nanofibers for High-performance Li-ion Batteries</i>	147
Yeji Choi	<i>Wear Trials of Knit T-shirts With and Without a Phase Change Material</i>	148
Simge Uzun	<i>In-situ X-ray Study of the Deformation Mechanisms of Nonwoven Aramids</i>	149
Goeun Sim	<i>Hydrophobization of Cotton Fabrics via Silica Nanocoatings</i>	150