

Fiber Society 2026 Spring Conference

Learn From the Past and Dream the Future

St. Gallen, Switzerland
20 - 22 May 2026

ISBN: 979-8-3313-3885-5

Printed from e-media with permission by:

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



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2026) by The Fiber Society
All rights reserved.

Printed with permission by Curran Associates, Inc. (2026)

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

The Fiber Society
c/o J. R. Gerde
P.O. Box 564
Ft. Meade, MD 20755-0564
USA

Phone: 703.921.7139

pam.fibersociety@gmail.com

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

PLENARY SPEAKERS

Fibers that Reveal Strain Through Continuous Color Change: Spinning of Mechanochromic Liquid Crystal Elastomers.....	3
<i>J.P.F. Lagerwall</i>	

SUSTAINABILITY AND RECYCLING OF FIBERS

Advanced Fiber Membranes for Sustainable Energy and Environmental Applications	7
<i>M. Zhu</i>	
Recycling of Colored Silk Waste.....	8
<i>J. Chen</i>	
Simultaneous Dyeing and Multifunctional Finishing of Cotton Using in Situ Synthesised Semi- Synthetic Dyes.....	9
<i>H. Sheikh</i>	
The Bleaching of Denim by Stereoselective Ozonide	10
<i>O. Balci</i>	
Investigating the Use of Stereoselective Ozonides as a Novel Bleaching Agent for Cotton Fabrics	11
<i>B. Sancar</i>	
Separation of Polyester-Cotton Blends by Surface Interactions with Oil and Water.....	12
<i>G.C. Acaso</i>	
Material-Efficient Prototyping for Defence: Printing Modular Armour Plates with PLA, PC, and Support Polymers Via FFF	13
<i>M.J. Abreu</i>	
Evaluation of Circular Pathways for Denim-To-Denim Recycling Through Environmental Life Cycle Assessment: A Novel Allocation Method.....	14
<i>S. Karmaku</i>	
From Waste to Wardrobe: Circular Wet Spinning of Textile Waste into Renewable Fibres for Sustainable Fashion	15
<i>S.S. Rahatekar</i>	
A Novel and Efficient Microwave Heating Method for the False-Twist Texturing Process.....	16
<i>M. Ortega</i>	
Development and Performance Evaluation of Nonwoven Filters for Grease Recovery from Wool Scouring Effluent.....	17
<i>I. Parveen</i>	
Sustainable Knitted Aerogel Liners for High-Performance Insulation in Cold Weather Clothing	18
<i>S. Behera</i>	
Deriving Microfibers and Microparticles from Textile Waste and Their New Applications	19
<i>R. Rajkhowa</i>	

Electrospun Nanofibrous Filter Materials for Remediation of Water Contaminants	20
<i>L. Zhang</i>	
Sustainable Fibres from Blue Bioeconomy	21
<i>M. Vieira</i>	
From Plastic Waste to Functional Air Filters: Sustainable Upcycled PET Nanofibres with In-Situ Ag Nanodots for Antibacterial and Self-Charging Filtration.....	22
<i>B. Thakur</i>	
Textile-Based Adsorbents for Dye Removal in Textile Wastewater	23
<i>A. Pinto</i>	
From Textile-To-Textile Chemical Recycling to Filament Yarn Production: Comparative Performance of Virgin and Recycled Polyester Yarns	24
<i>K. Kilinc</i>	

SMART TEXTILES AND FIBER-BASED WEARABLES

Development of Phase-Change Core-Sheath Fibers for Actuation Applications.....	27
<i>B. Fei</i>	
Structural-Sensor Unification in Load-Bearing Polymer Ropes.....	28
<i>D. Xu</i>	
Functional Textiles with Durable Superhydrophobicity and Antibacterial Activity	29
<i>E. Pakdel</i>	
Development of Sensors for E-Textiles: Focus on the Case of InkJet Printing	30
<i>G. Covarel</i>	
Nature-Inspired Sweat Recycling Clothing System for Personal Thermal and Moisture Management	31
<i>D. Shou</i>	
Elastic Core-Conductive Filaments Enabling Robust Strain Sensing in Vehicles, Infrastructure, and Wearables	32
<i>F. Pursche</i>	
Fully Textile-Integrated Capacitive Sensors for Portable Gait Analysis Applications	33
<i>S. Singh</i>	
Catalytic Fabrics from Metal Nanoparticles-Decorated Hierarchical Microfibers.....	34
<i>T. Reuveni</i>	
Liquid Crystal Elastomer Fibers: Design and Application	35
<i>Y. Yan</i>	
Mechanical Force Responsive Coatings for Smart Fibre Applications	36
<i>T. Nguyen</i>	
Water Gradient Inversion-Enabled Hydrogel Moisture Electricity Generator.....	37
<i>Z. Li</i>	

Functionalized Micro/Nanofiber-Based Biosensing Platform for Visual, High-Sensitive, Bacterial Detection	38
<i>J. Zhang</i>	
MXene Fibers for Future Textiles.....	39
<i>J.M. Razal</i>	
Fabric Supercapacitor Based on Hydrogel Composite	40
<i>J.Y. Chen</i>	
Polymer Complex Fibers.....	41
<i>S. Yang</i>	
Investigating the Interplay Between Varied Algal Feedstocks and Blade Coating Configurations	42
<i>T. Ferreira</i>	
Finite Element Modeling of Soft Bracing Biomechanics to Optimize Textile-Based Brace Design for Mild Adolescent Idiopathic Scoliosis	43
<i>Y.Y. Cheung</i>	

NANO- AND MICROFIBER TECHNOLOGY

Functional Nanofiber-Enabled Architectures for Advanced Lithium-Sulfur Energy Storage	47
<i>X. Zhang</i>	
High-Performance PTFE Nanofibrous Membranes for Robust and Efficient Membrane Distillation	48
<i>L. Zhu</i>	
Deep Eutectic Solvents as a Tunable Platform for Sustainable Modification of Bast Fibers	49
<i>A.N.M.A. Haque</i>	
Functionalization of Textiles with Nanofiber Coatings	50
<i>A.D. Erem</i>	
Effect of Morphology of Poly(pyrrole) Nanostructures on the Spinnability and Conductivity of Solution-Spun PU Composite Fibres for E-Textiles.....	51
<i>K. Rana</i>	
Supersonic Solution Blowing: A Novel Method in Nonwovens to Produce 50 Nm Fibers En Masse	53
<i>S. Sinha-Ray</i>	
Electrospun ZIF-Derived Carbon Nanofibers as Functional Electrodes for Sodium-Ion Batteries.....	54
<i>F. Mohtaram</i>	
Gravity-Driven Separation of Alcohol/Water with Stable Hydrophobic Organosilica Nanofiber Membranes	55
<i>S. Verschraegen</i>	

FIBERS FOR COMFORT AND PROTECTION

Manufacturing Flame-Resistant Lyocell Fibre from Fire Protective Clothing Waste.....	59
<i>P.I. Dolez</i>	

Phosphorylated Sodium Lignosulphonate: An Emerging Low Add-On Bio-Based Flame Retardant for Multifunctional Textiles.....	60
<i>S.W. Ali</i>	
Thermo-Physiological Comfort Behaviour of Cut Protective Fabric Woven from Metallic Core-Covered Yarn.....	61
<i>M.Z. Hasan</i>	
Development of Bioinspired Feather-Like Warm Multifunctional Thermoregulation Fibre Through the Melt-Spinning Process.....	62
<i>K. Ghosh</i>	
Sharp Object Threats (SOT) Dilemma: Next-Generation Material/Design Strategies for Comprehensive Protection Against Sharp-Forced Action	63
<i>A. Das</i>	
Advanced Comfort Evaluation Technologies	64
<i>J. Fan</i>	
Experimental Investigation of Influence of Structural Parameters of Multilayer Fabric on Thermal Protective Performance at Different Orientations.....	65
<i>S. Maurya</i>	
Mechanical Performance of Cut Protective Woven Fabric Made with Hard Particle Impregnated UHMWPE Hybrid Yarn.....	66
<i>M.A. Islam</i>	
Optimising Aramid/PBO Blends for Firefighter Protection	67
<i>M.D.I. Amin</i>	
Air Cooling Via Multilayer Stacked Wetted Fabrics	68
<i>Z. Kang</i>	

FIBER-REINFORCED COMPOSITES

Development of Overcoated Prepreg Filaments for Sustainable Composites	71
<i>S. Dul</i>	
Effect of a Fixed Blade Gap on the Fibre-Matrix Interface Microbond Test.....	72
<i>B. Malone</i>	
Effect of Hemp Fibre Additives on the Volumetric and Mechanical Properties of Porous Asphalt Mix	73
<i>O. Al-Maskari</i>	

HIGH-PERFORMANCE FIBERS AND TEXTILES

Low-Entangled, Ultra-High Molecular Weight Polymers: Synthesis, Characterization, and Solid-State Processing into Uniaxial and Biaxial Films.....	77
<i>S. Rastogi</i>	
Application-Driven Design of Fibers and Textiles	78
<i>L.M. Shepherd</i>	

Preparation of Flexible Ceramic Fibers and Their Aggregate Construction.....	79
<i>C. Jia</i>	
Percolation-Guided Design of Anisotropic Conductive Composites.....	80
<i>D. Singh</i>	
Non-Steady State Melt Spinning Process for Preparing Fibers of Unique Structure.....	81
<i>T. Kikutani</i>	
Catalytic Approaches to Sustainable Fiber Spinning.....	82
<i>E. Perret</i>	
A Novel Method for Compliance-Free Single Fiber Tensile Tests on Carbon Fibers Using Video Extensometry.....	83
<i>L. De Block</i>	
Advances in Regenerated Silk Spinning.....	84
<i>B.J. Allardyce</i>	
PEI-Grafted Electrospun PES Fibers for PFAS Removal from Water.....	85
<i>C. Brendle</i>	
Influence of Strain Rate on Tensile Behavior of Kevlar® 49 Yarns	86
<i>M.A. Bueno</i>	
High-Strength Textile Wires—Combining Plasma Metallization with Textile Processing	87
<i>D. Hegemann</i>	
Basalt Fibers as an Alternative to Glass? The Role of Chemistry, Sizing, and Mechanical Reliability	88
<i>D. Seveno</i>	
A Fibre-Electronic Somatic Interface for Non-Wearable Sleep Monitoring.....	89
<i>X. Chen</i>	
Scalable Fabrication of Ordered Nanowire Arrays Via Fiber Thermal Drawing.....	90
<i>Y. Meng</i>	
Thermally Drawn Elastomeric Single-Mode Optical Fibre.....	91
<i>J. Song</i>	

MICROPLASTIC FIBER POLLUTION

Strategies to Reduce Textile Microplastics.....	95
<i>M. Naebe</i>	
More Circular, More Microplastics? Recycling History Effects on Fiber Shedding	96
<i>M. Persson</i>	
Impact of Water Hardness on Textile Microplastic Shedding and AI-Based Detection	97
<i>M.I. Hossain</i>	

HEALTHCARE AND BIOMEDICAL TEXTILES

From 2D Mats to 3D Architectures: Rapid Acid-Activated Gas Foaming Creates Thick, Porous, Nanofibrous Scaffolds for Epidermal Repair	101
<i>S. Liu</i>	
Stent Segments to Improve the Compliance of Textile Vascular Grafts: A Preliminary Assessment	102
<i>A.R. Asaad</i>	
Silk Fibroin Fibers for Biohybrid Medical Implants	103
<i>A. Papakonstantinou</i>	
Design Principles and Performance Characteristics of Knitted Textile TENGs for Smart Wearables.....	104
<i>B. Kumar</i>	
Comparative Analysis of the Possibility for Evaluation of the Thermal Comfort of Compression Products Using Simulation Software.....	105
<i>Y. Kyosev</i>	
Protein-Based Nanofibrous Mats for Wound Care	106
<i>A.C. Vale</i>	
Humidity-Responsive Mechanical Performance and Shape Memory of Crosslinked Poly(2-Ethyl-2-Oxazoline) Nanofibers.....	107
<i>O. Frateur</i>	
Microfluidic-Spun Coaxial Fibers with Bioactivity for Diabetic Foot Ulcer Care.....	108
<i>J. Fernandes</i>	
Wet Spun Coaxial Fibers Loaded with a New CW49 Peptide Analogue for Diabetic Foot Ulcer Wound Dressings.....	109
<i>A.F.G. Silva</i>	
Melt-Spun Liquid-Core Fibers with Anti-Inflammatory Properties for Hernia Meshes.....	110
<i>D. Toumpa</i>	
From Embroidery to Implant: Evaluating Machine-Embroidered Biomedical Textiles Via Uniaxial Testing and Digital Image Correlation	111
<i>C. Elschner</i>	
Textile Electrodes for Long-Term ECG Monitoring	112
<i>E. Mevskaa</i>	
Near-Net-Shape Free-Standing Lace Embroidery of Hemispherical Textile Structures.....	113
<i>R. Tonndorf</i>	

FIBER MODELING AND CHARACTERIZATION

Physical Reliability of Natural Fibers.....	117
<i>H. Hieber</i>	
High-Throughput Fiber Phenotyping for Estimating Cotton Biological Fineness	118
<i>B. Xu</i>	

Simulation of 3D Interlock Composite Reinforcements Using a Virtual Fiber Approach.....	119
<i>R. Zheng</i>	
Insect Appendages as Inspirational Fluid-Filled Fibers.....	120
<i>K.G. Kornev</i>	
Structural Analysis of Technical Fibers and Elementary Fibers in Wet-Spun Linen Yarn.....	121
<i>H. Zubair</i>	
A Virtual Fiber Finite Element Digital Twin for Twisted Staple Yarns.....	122
<i>K.S. Dogahe</i>	
Architecture-Based Analytical Framework for the Elastic Response of Complex-Shaped Braids.....	123
<i>A. Maurya</i>	

BIOBASED AND BIODEGRADABLE FIBERS

Eco-Friendly Nanocellulose Technology for Coloration of Cotton, Lyocell, and Cotton Blend Fabrics	127
<i>S. Minko</i>	
Electrospun Biopolymer Composite Nanofibers	128
<i>C.L. Schauer</i>	
Strong and Inert Biobased Electrospun Membranes for Wound Healing	129
<i>A.M.S. Plath</i>	
Structural Transition Mechanism from Unoriented α -Helix to Highly Oriented β -Sheet in Silk Proteins Containing Polyalanine Blocks	130
<i>T. Yoshioka</i>	
Sustainable and Skin-Friendly Odor Management: Non-Biocidal Functionalization of Polylactic Acid Fabrics Using β -Cyclodextrin Molecular Traps.....	131
<i>Y. Yang</i>	
Fiber-Reinforced Alginate Films for Packaging	132
<i>S. Maitra</i>	
Colored, Biobased, Biodegradable, and Daylight-Induced Biocidal Fibrous Membranes for PPE Materials.....	133
<i>G. Sun</i>	
Processing and Applications of African Silk Biomaterials	134
<i>H. Kgomo</i>	
In Situ X-Ray Study of Green Fibres Carbonization	136
<i>L. Dieval</i>	
Sustainable and Functional 100% Portuguese Man-Made Cellulose Fibres: Advances from the Be@t Project	137
<i>T. Damaceno</i>	

- 01 *Fabrication of P2Ox-based WBPU Nanofibers* | Meryem Kalkan Erdoğan | Ankara University...141
- 02 *Innovative Inflatable Protective Suit for Fall Prevention in Construction: Design, Materials, and Validation* | Emilie Dréan | ENSISA...142
- 03 *Nanostructured Fibre-Aerogel Composite Membranes: Breathable Thermal Insulation for Enhanced Comfort and Protective Textiles* | Bhavesh Thakur | IIT-Delhi...143
- 04 *Fit Challenges and Modifications to Fire Protective Clothing Among Female Firefighters* | Jemma Forgie | University of Alberta...144
- 05 *Natural Dye Integrated Regenerated Cellulose Fibres via Ionic Liquid Processing for Sustainable Fashion* | Sameer Rahatekar | Loughborough University...145
- 06 *Waste-derived Lignocellulosic Adsorbents for Sustainable Removal of Dyes from Textile Wastewater* | Vivek Jaiswal | IIT Delhi...146
- 07 *Spinning Nanocellulose Suspensions: A Network Design Approach for High-performance Biopolymer Fibres* | Anurag Kumar | Deakin University...147
- 08 *Design as a Lever for Integrating Hemp into the Textile Industry* | Nine Dijkmeier | University of Toulouse 2...148
- 09 *Sustainable Dyeing and Functionalization of Knitted Cotton Fabrics with Algae Extracts* | Helena Oliveira | Fibrenamics...149
- 10 *Textile Fibres for Valorization of Natural Resin* | Bruno Peliteiro | CeNTI...150
- 11 *Toward Circularity in Smart Textiles Through Sustainable Recovery of Polyamide 6 and Silver Particles via Selective Dissolution* | Suhyun Lee | Seoul National University...151
- 12 *Shock Wave-induced Damage and Dynamic Self-healing in Graphene Oxide-reinforced Vitrimer Composites with Closed Loop Reprocessability* | Akash Basu | Indian Institute of Science...152
- 13 *Surface Modification of Basalt Fiber-reinforced MC Nylon* | Yurong Yan | South China University of Technology...153
- 14 *Characterization of PFAS-free Hydrophobic Plasma Coatings for Yarns* | Patrick Rupper | Empa...154
- 15 *Self-healing Lithium-ion Batteries: Melt-spun Liquid-core Fibers for Selective Ion Scavenging* | Nina Biedermann | Empa...155
- 16 *Influence of Drug Loading Strategies on Release Behavior in Melt-spun Fibers* | Alessandro Rossi | Empa...156
- 17 *Transforming Melt-spun Fibers into Antimicrobial Drug Delivery Systems* | Benedetta Baga | Empa...157
- 18 *Textile-based Leads Enabling Non-invasive Neurostimulation During Functional MRI* | Martin Amberg | Empa...158
- 19 *Enabling Sustainability and Fibre Circularity: Case Study for the Implementation of the Digital Product Passport (DPP) in Portuguese Textile Companies* | Maria José Abreu | University of Minho...159

- 20 *Upcycling Cotton Waste into Reinforced PCL Fibers: A Comparative Study Across Electrospinning, Forcespinning, and Wet Spinning* | Francisca Silva | University of Minho...160
- 21 *Test Method of the Resistance of Joule Heating Textiles to Abrasion* | Patricia Dolez | University of Alberta...161
- 22 *Chipless Electronic Textiles for Display and Interaction* | Weifeng Yang | ETH Zurich...162
- 23 *Detect and Protect: COF Textiles for Real-time SO₂ Surveillance in Harsh Environments* | Sa Wang | ETH Zurich...163
- 24 *Boxer Underwear Incorporating Textile Bioimpedance Sensor to Prevent Nocturnal Enuresis* | Hayriye Gidik | Junia...164
- 25 *Multiplexed Implantable Fiber for Real-time Blood Monitoring* | Zhizhi Wu | Hong Kong Polytechnic University...165
- 26 *Cellular Core/Sheath Filaments with Thermoresponsive Vacuum Cavities for Prolonged Passive Temperature-adaptive Thermoregulation* | Jiayi Sui | Hong Kong Polytechnic University...166
- 27 *Nano-hybridized Phase Change Material Melt-spun Fibers and Fabrics with Radiative Cooling and Solar Heating for Efficient All-weather Personal Thermal Management* | Hongchao Li | Donghua University...167
- 28 *Development of Sensors for E-Textiles: Focus on the Case of Embroidery* | Corrine Jung | ENSISA...168
- 29 *Thermally Responsive Multispiral-shaped Liquid Crystal Elastic Artificial Muscle* | Wen Wang | Wuhan Textile University...169
- 30 *Multifunctional Biobased-nanocomposite Fibers for Air Quality Improvement and Monitoring* | Luciano Boesel | Empa...171
- 31 *E-Textiles for Body-coupled Electromagnetic Energy Recovery* | Yuanlong Li | ETH Zurich...172
- 32 *PHA Melt-spun Fibres for Sustainable Textiles* | Manuel Vieira | CeNTI...173
- 33 *Design and Optimization of Conductive Bio-copolymer Composites Derived from Surface-modified Soybean Fibers* | Meral Karakışla | Ankara University...174
- 34 *Digital Twin Modeling of PLA Diffusion in scCO₂* | Yonghui Luo | Hong Kong Polytechnic University...175
- 35 *Directional Liquid Transport Textiles: Performance Characterization and Application-specific Optimization* | Luning Yuan | Hong Kong Polytechnic University...176
- 36 *Analysis of Flax Fiber Spinning and Yarn Evenness* | Hanzla Zubair | Université de Haute Alsace...177
- 37 *Toward a Textile-integrated Artificial Skin Model for Dry and Wet Skin-Textile Friction* | Astrid Pinateau | Université de Haute Alsace...179