The Fiber Society 2024 Fall Meeting and Technical Conference

Come to Where the Future of Fibers Is

October 23–25, 2024

Conference Chairs
Emilie Dréan
Frédéric Heim
Dominique Adolphe

Venue
ENSISA–Université de Haute-Alsace
Mulhouse, France

Sponsored by

Final Program

Tuesday, October 22
2:00 PM–5:00 PM Governing Council Meeting, ENSISA Campus
Meeting Room 202

Wednesday, October 23

7:30 Registration,
7:30 Continental Breakfast

8:30 Welcoming Remarks and Announcements (RAS Amphitheater)

Pierre-Alain Muller, University President
Jean-Marc Perronne, ENSISA Director
Caroline Schauer, President, The Fiber Society
Frédéric Heim, Laboratory Director
Emilie Dréan, Conference Co-Chair

9:00 **Keynote Speaker:** Pierre Ouagne, Ecole Nationale d'Ingénieurs de Tarbes
Is There Some Space for Mechanical Property Improvement of European Bast Fibres?

Morning Sessions

	RAS Amphitheater	**Library, Room 253**
	Session: Biosourced Fibers ***Chair: Pierre Ouagne***	**Session: Composites** ***Chair: Karine Gautier***
9:30	*Conversion of Raw Sisal into Spinnable Fiber for Textiles Using Eco-friendly Enzymatic Treatment* Sheraz Ahmad, National Textile University	*Composite Polypropylene Filaments for 3D Printing via Fused Filament Fabrication* Igor Luzinov, Clemson University
9:40	*Achieving Spinnable Banana Fibers for Textile and Apparel Using Enzymatic Treatment* Faheem Ahmad, National Textile University	*Polarimetric Imaging of Flax Composite Material Reinforcements* Laurent Bigué, Université de Haute-Alsace
9:50	*Artificial Fabric Skin for Simulating Sweating* Qirui Zhang, Hong Kong Polytechnic University	*A Novel, Sweatable, Personal Cooling Textile with Efficient Directional Sweat Transportation and Radiative Cooling* Yuheng Gu, Hong Kong Polytechnic University
10:00	*Dual-responsive Yarn-based Artificial Muscles with Stable and High-powered Density* Mengjiao Pan, Hong Kong Polytechnic University	*Basalt Fibers: A Combined Physical, Chemical, and Mechanical Analysis* David Seveno, KU Leuven
10:10	Open Discussion	*Carbon Yarn Degradation During Weaving: Weave Pattern and Defects Analysis* Julie Walther, Université de Haute-Alsace
10:20–10:40	*Open*	Open Discussion

11:00 ***Break, Library***

	RAS Amphitheater	**Library, Room 253**
	Session: Textile Surface Topography, Tribology, and Surface Characterization ***Chair: David Seveno***	**Session: Advanced Functionalization of Textiles** ***Chair: Frédéric Heim***
11:30	*Yarns Friction: Effect of Contact Angle and Twist* Michel Tourlonias, Université de Haute-Alsace	*Influence of Filament Cross-sectional Shape on Dust Retention in Household Cleaning Textiles* Bénédicte Strich, Université de Lille
11:40	*Development of Eco-friendly, Flame-retardant Cotton Fabric via Coating with Calcium Phosphate Extracted from Waste Chicken Bones* Gurumurthy Ramaiah, Federal TVT Institute (on behalf of Robert Legese Meko)	*Nanofibrillated Cellulose-based Dyeing Technology for Cotton and Cotton-blended Textiles* Sergiy Minko, University of Georgia
11:50	*Tactile Simulation of Fabrics from a Tactile Stimulator* Marie-Ange Bueno, Université de Haute-Alsace	*Durable, Breathable, Weather-adaptive Coating for Energy-saving Textiles* Jinhao Xu, Hong Kong Polytechnic University
12:00	*Understanding the Haptic Nature of Rose Petals: Engineering the Hand Feel of Textiles* Rupali, University of Alberta	*Abrasion, Pilling, and Garment Lifetime: The Case of Pullover Garments* Anne Perwuelz, Université de Lille

12:10	*X-ray Imaging to Analyze Water Droplet Penetration into Knitted Fabrics* Florence Biguenet, Université de Haute-Alsace	*Using Virtual Reality to Explore the Microscopic Scale* Gilles Arnold, Université de Haute-Alsace
12:20	*Superhydrophobic Textiles: Roughness as an Alternative to Perfluorinated Compounds* Annaelle Erard, Université de Lille	Open Discussion
12:30–12:50	Open Discussion	*Open*
1:00	***Lunch, University Restaurant***	

Afternoon Sessions

2:30	**Keynote Speaker:** René Rossi, Empa *Smart Fibers and Textiles: Potential and Challenges*

	RAS Amphitheater	**Library, Room 253**
	Session: Smart Textiles ***Chair: René Rossi***	**Session: Textiles Recycling** ***Chair: Omar Harzallah***
3:00	*Design of Friction and Compression Sensor from Knitted Fabric, Including a Polymer Optical Fiber* Meriem Benzarti, Université de Haute-Alsace	*Mapping of Textile Recovery Possibilities* Chloe Magnan, Université de Lille
3:10	*Hydrogen Bond: Constructing Mechanical Properties of Macromolecules* Yurong Yan, South China University of Technology	*Vat Dye Removal for Textile Recycling Using Fructose as a Reducing Agent* Corentin Nogacz, Université de Lille
3:20	*Sensors and Actuators Based on Liquid-core Fibers* Rudolf Hufenus, Empa	*Comparison of Fiber Compliance Calculation Methods and Sampling of Recycled Carbon Fiber and Virgin Carbon Fiber* Jean Ivars, Université de Lille
3:30	*Double-sided, Super-hyrdophilic/Superspreading Fabric for Ultrafast Asymmetric Sweat Transport and in-situ Power Generation* Hanchao Zhang, Hong Kong Polytechnic University	*Impact Assessment and Product Life Cycle Analysis of Different Jersey Fabrics Using Conventional, Pre- and Post-consumer Recycled Cotton Fibers* Maria José Abreu, University of Minho
3:40	*Design of Future Activewear by Intelligent Active Perspiration Textiles* Dahua Shou, Hong Kong Polytechnic University	*Mechanically Recycled Fibers and Spinnability* Nawar Kadi, University of Borås
3:50	*Fabric Sensing Device for Dysphagia Measurement and Monitoring* Jonathan Chen, University of Texas at Austin	Open Discussion
4:00	*Enhancing Smart Textile Antennas for Wireless Communication Networks: Integrating Multimaterial Fibers and Machine Learning* Yosef Enku, Federal TVT Institute	*Open*
4:10–4:30	Open Discussion	*Open*
4:30–6:00	**Poster Session and Reception** **Rue des Ateliers**	
6:00	**Wine Tasting**	

Thursday, October 24

8:00 Continental Breakfast

9:00 **Keynote Speaker:** Lu Wang, Donghua University
Textile-based Physiological, Environment-responsive Devices for High-quality Tissue Regeneration

Morning Sessions

	RAS Amphitheater	**Library, Room 253**
	Session: Biomedical Textiles ***Chair: Lu Wang***	**Session: Biosourced Fibers** ***Chair: Caroline Schauer***
9:30	*Melt-spun, Liquid-core Fibers: Transforming Drug Delivery Solutions* Edith Perret, Empa	*Regenerated Cellulose Fibres from Farming Residues and Recycled Textiles Using the Lyocell Process* Patricia Dolez, University of Alberta
9:40	*Role of Fiber Diameter and Arrangement in Nucleus and Mitotic Biology* Amrinder Nain, Virginia Tech	*Wet-spinning of Lignin-SWCNT Carbon Fibres Using Low-cost Ionic Liquids* Zoyia Kamora, Imperial College London
9:50	*Development of a New Bilayer Dressing* Elise Girault, Université de Haute-Alsace	*A Study on Mechanical Properties and Processability of Partially Oriented Yarn Produced from Polylactic Acid after Standard Storage Conditions* Kerim Kılınç
10:00	*Nanofiber Scaffolds for 3D Cell Culture* Vladimir Reukov, University of Georgia	*Degradation of Hemp Stems and Fibers During Field Retting in the East of France* Aurélie Decker, Université de Haute-Alsace
10:10	*Vascular Grafts: How to Improve Compliance* Abdul Rahman Asaad, Université de Haute-Alsace	*Pores in Flax Fibers at the Origin of Failure Mechanisms: A Research Work Using X-ray Microtomography and Finite Element Modeling* Delphine Quereilhac, Université de Toulouse
10:20	*Engineering Nanofiber Surface Coating for the Mitigation of Microbial Biofilms on Medical Devices* Bahareh Behkam, Virginia Tech	*Continuous Wet-spinning of Lignin Using a Low-cost Ionic Liquid for Cost-effective, Sustainable Carbon Fibers* Joanne Pui Fai Ng, Imperial College London
10:30	Open Discussion	*Radiation-induced Grafting of Lignocellulosic Materials* Clément Brendlé, Mines d'Alès
10:40–11:00	*Open*	Open Discussion

11:00	***Break, Library***

	RAS Amphitheater	**Library, Room 253**
	Session: Smart Textiles ***Chair: Emilie Dréan***	**Session: Fibrous Constructions: Design, Characterization, and Modeling** ***Chair: Artan Sinoimeri***
11:30	*Sustainable Activated Carbon Derived from Banana Peels and PEDOT:PSS Composite for Textile-based Supercapacitor Uses* Melki Tadesse, Albstadt-Sigmarigen University	*Predictive Analytics for Weaving Quality Through Machine Learning: A Novel Approach in Fiber Manufacturing and Characterization* Ravindra Babu Bellam, Federal TVT Institute
11:40	*Deep Learning-assisted, Fabric-based, Self-powered Sensor for Object Recognition* Chengzhao Kuang, Hong Kong Polytechnic University	*Developmental Approach for PFAS-free Light-guiding Fibres as a Positive Example for the Fibre Industry* Mark Pätzel, RWTH Aachen University
11:50	*Skin-like Sweatable Fabrics with High Stretchability and Wearability* Jun Wan, Hong Kong Polytechnic University	*Aromatic Polyamide Fiber: Focus on the Role of Microfibril Cooperativity in Fracture Toughness* Bruno Bresson, ESPCI Paris

12:00	*Advancing Textile Fiber Transducers for Airflow Measurement and Characterization* Alexandre Khaldi, IMT Atlantique	*Design and Construction of Fibrous Membranes with Amphiphobic Surfaces for Water Purification* Liping Zhu, Donghua University
12:10	*Plant-inspired Fabric Dehumidifier for Sweat Management* Hongfei Yang, Hong Kong Polytechnic University	*Torsion Influence on the Relaxation Function of Worsted Yarns* Ivelin Rahnev, E. Miroglio EAD
12:20	*Nanofiber-based, All-Solid-State, Lithium-Sulfur Batteries* Xiangwu Zhang, North Carolina State University	*Evaluation of Key Parameters Influencing Tensile Behavior of Kevlar® 49 Yarns* Marie-Amélie Begaud, Université de Haute-Alsace
12:30–12:50	Open Discussion	Open Discussion

1:00 ***Lunch, University Restaurant***

Afternoon Sessions

2:30 **Keynote Speaker:** Yordan Kyosev, TUD-Dresden University of Technology
The Power of Virtual Clothes Design

	RAS Amphitheater
3:00	**Student Paper Competition** **Chair: Yurong Yan** • Hongmei Liu, Donghua University, *Interfacial, Crystallization-constructed, Fractal Nanofiber-based Bio-platforms Enable Highly Effective Culture of 3D Stem Cell Spheroids* • Shaoji Wu, South China University of Technology, *Spider Silk-inspired Strong and Tough Hydrogel Fibers with Antifreezing and Water Retention Properties* • Marjan Haghayegh, Donghua University, *Wrinkled, Fiber-based Triboelectric Nanogenerators with Enhanced Stretchability for Wearable Devices*

4:30 ***Break, Library***

5:00–5:30 **Fiber Society Annual Business Meeting: *Open to Fiber Society Members Only***
Library, Room 253

7:00 **Banquet: NoMad Restaurant** (directions provided at registration)
Speaker: Pierre Schmitt, Emmanuel Lang Flax Composites
How to Restore the Textile Innovation Spirit

Friday, October 25

8:00 Continental Breakfast

9:00 **Keynote Speaker:** Raoul Farer, North Carolina State University
Nonwovens: State of the Industry and Opportunities

	RAS Amphitheater	**Library, Room 253**
	Session: Fibrous Construction: Design, Characterization, and Modeling ***Chair: Raoul Farer***	**Session: Composites** ***Chair: Marie-Ange Bueno***
9:30	*Sensor Mat for Patient Position Monitoring During Robot-assisted Operations Based on Cross-coupling of Polymer Optical Fibres* Fabian Köntges, RWTH Aachen University	*Influence of Cutting Conditions on Temperature, Forces, and Cutting Quality when Trimming a Flax Fiber-reinforced Polymer* Anne Collaine, Université de Haute-Alsace
9:40	*Novel Weft Knitting Process to Obtain New Knitted Structures* Prisca Holderied, Niederrhein University of Applied Sciences	*Tribological and Mechanical Characteristics of a Sandwich Composite Made from Carbon Fiber and Sisal Fiber-reinforced Materials* Gurumurthy Ramaiah, Federal TVT Institute

9:50	*Liquid Moisture Management Textiles: Mechanisms, Characterization, and Product Innovations* Jintu Fan, Hong Kong Polytechnic University	*New Building Materials from Fibers Recovered from End-of-Life Clothes* Mònica Ardanuy, Universitat Politècnica de Catalunya
10:00	*The Impact of Determined Industrial Manufacturing Factors of PET Multifilament Yarns on Microplastic Fibres Generation* Antoine Cosne, DECATHLON	*Yarn Degradation During Interlock Weaving: Weave Pattern Impact on Yarn Arrangement and Prepositioning* Mathieu Decrette, Université de Haute-Alsace
10:10	*Theoretical Framework for Optimizing Fog Harvesting and Air-Water Separation in Nonwoven Materials* Sumit Sharma, University of Borås	*Additive Manufacturing of Continuous Carbon Fiber/Thermoset Composites* Kelvin Fu, University of Delaware
10:20	*Dual Layer Interconnected Hierarchical Fibrous Network for Directional Moisture Transport* Aijaz Ahmed Babar, Shenzhen University	Open Discussion
10:30–10:50	Open Discussion	*Open*

11:00 ***Break, Library***

	RAS Amphitheater	**Library Room 253**
11:30	**Session: Biosourced Fibers** ***Chair: Rudolf Hufenus***	**Session: Smart Textiles** ***Chair: Dominique Adolphe***
11:40	*New Eco-responsible, Man-made Cellulosic Fibers: Rheological Study of Dope for Wet Spinning* Charlotte Mourgue, Université de Lille	*Smart Shade: Temperature-adaptive Polymers for Sun Protection* Katrin Selzner, RWTH Aachen University
11:50	*Peculiar Crystallization and Melting Behavior of Oriented Amorphous Poly(L-lactic acid) Fibers Revealed by High-speed DSC Measurement* Takeshi Kikutani, Tokyo Institute of Technology	*Dehumidification System Based on One-way Water Transport Fabrics* Shitong Wu, Hong Kong Polytechnic University
12:00	Characterization of a Single Fibre's Mechanical Behaviour Under Vibrational Testing Fanny Pelisson, Université de Franche-Comté	*Evaluating the Durability and Performance of Knitted Textile Conductive Routing after Repeated Washing* Emanuel Gunnarsson, University of Borås
12:10	*Sustainable Clothing from Bio-based Polyethylene Yarns* Mathias Ortega, RWTH Aachen University	*Influence of Textile Parameters on the Electrical Properties of Conductive Tracks Realized by Inkjet Printing* Gregory Covarel, Université de Haute-Alsace
12:20	*Melt-spun Biodegradable Fibers: Promises and Challenges* Mohammadreza Naeimirad, Senbis Polymer Innovations B.V.	Open Discussion
12:30	*Fidelity and Accuracy of the 3D Reconstructed Morphology of Elementary Flax Fiber Using Optical Projection and X-ray Microtomography: A Comparative Study* Anouk Chevallier, Université de Franche-Comté	*Open*
12:40–1:00	Open Discussion	*Open*

1:00 Close of Conference

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Poster Session

Wednesday, October 23 **Time: 4:30 p.m.–6:00 p.m.** **Rue des Ateliers**
Session Chair: Élise Girault

Presenter	Title
1. Mridusmita Barman	*Composition and Morphology in Banana Fibre*
2. Abimbola Orisawayi	*Development of Hybrid Electrospun Alginate-Pulverized Moringa Composites*
3. Rupali	*Enhanced Thermal Cooling Sensation of Knitted Fabrics Using Paraffin Wax Coating*
4. Mònica Ardanuy	*Study of Mechanical Recycling of Jeans-like Fabrics*
5. Astrid Pinateau	*Skin Model for the Study of Complex Skin/Textiles Interactions in Dry and Humid Conditions*
6. Hyun Ju Oh	*Fabrication of High-performance Biodegradable PLA Melt-blown Nonwoven for Air Filtration*
7. Hyo Kyoung Kang	*Bead-on-String Structured Air Filter with Low Pressure Drop and Extended Lifespan*
8. Nathan Balestier	*Mechanical Model of a Staple Fiber Yarn*
9. Mark Pätzel	*Toward AI-based Inspection of Carbon-Fibre Reinforced Saxophone Reeds*
10. Fabian Köntges	*Seizure/Epilepsy Detection Using a Wearable Strain Gauge Based on Melt Spun TPU Filaments*
11. Tesnim Kacem	*Development of Semi-resorbable Textile for Biomedical Implant*
12. Katrin Selzner	*Tailored Crystallization of Precursor Fibre as an Opportunity for Polyethylene-based Carbon Fibres with Enhanced Mechanical Properties*
13. Maria José Abreu	*Implementation of the Digital Product Passport (DPP) in the Textile Industry*
14. Enny Tran	*Development of Sustainable Carbon Fibres Using Lignin and Poly(vinyl alcohol)*
15. Mathias Ortega	*Cost-effective CFRP for Lightweight Applications*
16. Ahmed Mezheri	*Development of Eco-friendly Bio-cohesive Agents for Sustainable Textile Applications*
17. Anna Fedčenko	*Modified Nanofibers with Durable Antibacterial Properties for Filtration Application*
18. Caihong Gong	*Programming Sustainable Polyimide Fibers Toward Multifunctional Materials*
19. Eunjou Yi	*An Investigation of Physical Properties of Standard Measurements Affecting 3D Virtual Simulation of Fabric Drape for Casual Shirts*
20. Lijun Wang	*Diapers with Next-to-Skin Moisture-adaptive Embossment for Improved Comfort*

21. Seungsin Lee	*Fabrication of Conductive Yarn Coated with PEDOT:PSS for Use as Electrodes in Textile Supercapacitors*
22. Hodong Kim	*Thermal Properties of Ethynyl Modified Polybenzoxazine and Preparation of Hybrid Fiber*
23. Jung Jin Lee	*Water-based Decolorization of Dyed PET Fiber and Depolymerization by Hydrolysis Method*
24. Tian Xia	*Clothing Wear Under Washing Conditions: Efficiency and Resistance Across Different Paramete*