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Functional Fibers and Textiles

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Sunday, May 24

12:00 PM–6:00 PM

3:00 PM–5:00 PM

6:30 PM–9:30 PM

Registration: No. 2 Teaching Bldg., Entrance Hall, Songjiang Campus, Donghua University

111 Project Annual Meeting (Jing-Gang-Shan Room, 12F, Neo-Sunshine Hotel)

Governing Council Meeting (Jing-Gang-Shan Room, 12F, Neo-Sunshine Hotel)

Donghua University *Songjiang Campus*

Monday, May 25

Morning

8:00 Registration Desk Opens, No. 2 Teaching Building, Entrance Hall

Opening Ceremony

No. 2 Teaching Building, Room 2137

8:30 Welcoming Remarks, Business, and Announcements

Plenary Lectures

No. 2 Teaching Building, Room 2137

Session Chair: Ton Peijs

9:00 *The Development of High-Performance Fibers at Donghua University* – Yimin Wang, Donghua University 3

9:30 *Future Textiles: From Functional to Smart* – Jinlian Hu, Hong Kong Polytechnic University 4

10:00 Photo Session

10:10 Coffee Break

Session Chair: Meifang Zhu

10:30 *Application of High-Speed Melt Spinning Process for Enhanced Fiber Structure Formation of PHBH* – Takeshi Kikutani, Tokyo Institute of Technology 6

11:00 *3D Scaffolds of Short Electrospun Nanofibers* – Andreas Greiner, University of Bayreuth 8

11:30 *Carbon Fibre Microelectrodes for Neuroscience Applications* – Xungai Wang, Deakin University 9

12:00–1:00 Lunch: Donghua Restaurant II (3F)

Afternoon

Poster Session

No. 2 Teaching Building, Hallway

1:00–3:30 Poster Presentations and Break

Oral Sessions

No. 2 Teaching Building, Room 2118

Session: Nanofibrous Materials

Session Chair: René Rossi

- 3:30 *Electrospun Nanofiber-Assembled Cellular Aerogels with Superelasticity and Multifunctionality* – Bin Ding, 19
Donghua University
- 4:00 *Artificial Muscles from Carbon Nanotube and Nylon Fibres* – Javad Foroughi, University of Wollongong 21
- 4:20 *Functional Nonwovens by Green Electrospinning* – Seema Agarwal, University of Bayreuth 23
- 4:40 *Nanofibrous Membranes with One-Way Oil Transport Ability and Advanced Oil-Water Separation 24 Performance* – Tong Lin, Deakin University
- 5:00 *Controlled Release of Active Agents from Electrospun Fibers* – René Rossi, Empa 26

No. 2 Teaching Building, Room 2109

Session: Functional Textiles and Clothing

Session Chair: Dominique Adolphe

- 3:30 *Functional Textiles for Biomedical Engineering* – Yi Li, Hong Kong Polytechnic University 28
- 4:00 *Textile Heart Valve: Fabric Construction Parameter and In Vivo Results* – Antoine Vaesken, ENSISA 30
- 4:20 *Thermal Comfort of Professional Sportswear with Physiological and Psychophysical Measurements During 31 High-Intensity Exercise* – Tsung-lin Liu, Taiwan Textile Research Institute
- 4:40 *Parameters Impact on Pressure Comfort in System “Female Body-Dress”* – Victor Kuzmichev, Ivanovo 33
State Polytechnic University (presented by Dominique Adolphe)
- 5:00 *Open*

No. 2 Teaching Building, Room 2105

Session: Fiber Applications in Medical, Transportation, and Energy

Session Chair: Jintu Fan

- 3:30 *Regenerated Keratin Fibers and Their Potential Applications in Textile and Biomedical Industries* – Yiqi 37
Yang, University of Nebraska-Lincoln
- 4:00 *Geometry Modeling of a Tubular Weft-Knitted Intestinal Stent* – Gang Li, Soochow University 39
- 4:20 *Fabrication of Multiscale Elastic Electrospun Fibrous Scaffolds for Repairing Augmentation of Rotator Cuff 41*
– Wenguo Cui, Soochow University
- 4:40 *Hyaluronic Acid-Functionalized Electrospun Random and Aligned PLA Nanofibers for Cancer Cell Capture 42*
– Yili Zhao, Donghua University
- 5:00 *Cellulose/Chitosan Composites Prepared in Ethylene Diamine/Potassium Thiocyanate for Adsorption of 44*
 Cu^{2+} – Min Xiao, Guangzhou Testing and Research Institute

No. 2 Teaching Building, Room 2106

Session: Nonwovens; Green Textile Manufacturing

Session Chair: Richard Kotek

- 3:30 *Solvent-Free, Solid State Processed Tapes of UHMWPE: Influence of Molar Mass and Molar Mass 49*
Distribution on Tensile Properties – Sanjay Rastogi, Loughborough University
- 4:00 *Evolution of Chain Entanglements of Ultrahigh Molecular Weight Polyethylene in Dilute Solution Blends 51*
During Thermal Annealing and Its Influence on Crystallization – Wei Li, Ningbo University
- 4:20 *Polypropylene (PP) Polymer and Its Nonwovens in Medical Applications* – Jamil Siddiqui, TASNE- 52
NIPRAS Plastics Research Center
- 4:40 *Investigation of Hydrostatic Pressure and Blood Penetration of a Nonwovens Material* – Peter Tsai, 53
University of Tennessee-Knoxville
- 5:00 *Open*

6:00–8:30 Banquet: Neo-Sunshine Hotel Shanghai

Tuesday, May 26

Morning

8:00 Registration Desk Opens, No. 2 Teaching Building, Entrance Hall

Oral Sessions

No. 2 Teaching Building, Room 2118

Session: Nanofibrous Materials; High-Performance Fibers and Composites

Session Chair: Sanjay Rastogi

- 8:30 *Chitosan Nanofibers for Cr (VI) Adsorption* – Chuanfang Yang, Chinese Academy of Sciences 57
9:00 *Gel Spinning of Nylon 6 and PVA* – Richard Kotek, North Carolina State University 58
9:20 *Modeling PA-6 Nanofiber Properties Produced by Needleless Electrospinning: Effect of Solution Concentration and Voltage* – Nabyl Khenoussi, ENSISA 60
9:40 *Effect of Reaction Solvents on Morphology and Properties of Interfacial Polymerized Polyaniline Nanofibers* – Tao Li, Donghua University 62
10:00 Break

Session Chair: Yingfeng Tu

- 10:20 *Production of Ultra-Strong Polymer Fibers from Extended Chains* – Donggang Yao, Georgia Institute of Technology 64
10:50 *Morphology and Structure Development of Aromatic Polysulfonamide Fibers During Spinning Process* – Yumei Zhang, Donghua University 66
11:20 *Study on the Silane Modification of PPTA Fibers* – Junrong Yu, Donghua University 68
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No. 2 Teaching Building, Room 2109

Session: Functional Textiles and Clothing

Session Chair: Laurence Schacher

- 8:30 *Flow Asymmetry in Fibrous Constructs* – Jintu Fan, Cornell University 71
9:00 *Change the Fiber Inner Structure by Twisting Monofilament Under a Hot Condition* – Zhigang Xia, Wuhan Textile University 73
9:20 *Flame-Resistant Protective Clothing in Industries* – Zina Zhu, Milliken & Company 75
9:40 *Fully-Printed Flexible Temperature Sensors on Textile Substrates for Textronic Applications* – Zbigniew Stempień, Lodz University of Technology 77
10:00 Break

Session Chair: Yimin Wang

- 10:20 *Scalable and Controllable Fabrication of Conductive Fibers and Fabrics Through Facile Dip-Dyeing Approach: New Design and Potential Applications* – Zong-Yi Qin, Donghua University 79
10:50 *Synthesis of Triarylmethane Reversible Thermochromic Colorant Using Bromocresol Purple for Smart Fabrics* – Wan Zhang, Jiangnan University 81
11:10 *Simulation of Stoll's Empirical Burn Criterion Using a Mathematical Model for Evaluation of Thermal Protective Clothing* – Li-Na Zhai, Donghua University 83
11:30 *3D Clothes Shaping by Means of the Sewing Edges Configuration and Fabric Properties* – Dominique Adolphe, ENSISA 85
11:50 Lunch: Donghua Restaurant II (3F)

No. 2 Teaching Building, Room 2105

Session: Fiber Applications in Medical, Transportation, and Energy

Session Chair: Janice Gerde

- 8:30 *Functional Polymer Nanofibers for Water Purification* – Xuefen Wang, Donghua University 89
9:00 *Melt-Spun Nanofibrous Filtration Media for Smog Control for Personal Respiratory Protection and Environmental Air Quality* – Tao Huang, DuPont 91
9:20 *Nanofibrous Scaffolds from Polycaprolactone as Wound Dressings* – Kateřina Pilařová, Technical University of Liberec 93

- 9:40 *Development of Poly(L-lactide-co-caprolactone) Multichannel Nerve Conduit with Aligned Electrospun Nanofibers for Schwann Cell Proliferation* – Muhammad Aqeel Bhutto, Donghua University 95
- 10:00 Break
- Session Chair: Xuming Xie**
- 10:20 *Development of Biocompatible Hydrogels for Biomedical Applications* – Bhuvanesh Gupta, Indian Institute of Technology 96
- 10:50 *Electrospun Porous Carbon Nanofiber@MoS₂ Core/Sheath Fiber Membranes as Highly Flexible and Binder-Free Anode for Lithium-Ion Batteries* – Yue-E Miao, Fudan University 97
- 11:10 *Hierarchical ZnCo₂O₄@NiCo₂O₄ Core-Sheath Nanowires: Bifunctionality Toward High-Performance Supercapacitors and Oxygen Reduction Reaction* – Yunpeng Huang, Fudan University 98
- 11:30 *Controllable Preparation of Multidimensional Hybrid Materials of Nickel-Cobalt Layered, Double Hydroxide Nanorods/Nanosheets on Electrospun Carbon Nanofibers for High-Performance Supercapacitors* – Feili Lai, Fudan University 99
- 11:50 Lunch: Donghua Restaurant II (3F)

No. 2 Teaching Building, Room 2106

Session: Functional and Smart Fibers

Session Chair: Yusuf Ulcay

- 8:30 *Fascinating Electroactive Hydrogels-Based Bacterial Cellulose* – Guang Yang, Huazhong University of Science and Technology 103
- 9:00 *Shape Memory Effect of Biopolymer Fibers Responsive to Humidity* – Xueling Xiao, Hong Kong Polytechnic University (presented by Jinlian Hu) 105
- 9:20 *Nanocellulose Hierarchical Structures and Functional Materials* – You-Lo Hsieh, University of California-Davis 107
- 9:40 *Molecular Orientation in Melt-Spun P3HB Fibers* – Rudolf Hufenus, Empa 109
- 10:00 Break

Session Chair: Jinlian Hu

- 10:20 *Changes in Microclimate Temperature by Temperature-Adaptable Materials Under Transient Conditions* – Eunae Kim, Yonsei University 111
- 10:50 *Effect of Hot Drawing on the Mechanical Properties, Moisture Absorption, and Dyeability of Novel Nylon 5,6 Fibers* – Yassir Eltahir, Donghua University 113
- 11:10 *Thermal-Stored Energy and Performance of Protective Clothing Upon Hot Water Exposure Using Instrumented Spray Manikin* – Farzan Gholamreza, University of Alberta 115
- 11:30 *Centrifugally-Spun Energy-Storage Nanofibers* – Xiangwu Zhang, North Carolina State University 117
- 11:50 Lunch: Donghua Restaurant II (3F)

Afternoon

Oral Sessions

No. 2 Teaching Building, Room 2118

Session: Nanofibrous Materials; High-Performance Fibers and Composites

Session Chair: Frederic Heim

- 1:00 *Electrospun Nanoyarn Scaffold for Tissue Engineering* – Xiumei Mo, Donghua University 121
- 1:30 *Air-Impedance Electrospinning Technique for Cartilage Regeneration* – Gary Bowlin, University of Memphis 122
- 1:50 *Polydopamine-Derived Porous Carbon Fiber Embedded with CoO Nanoparticles for Efficient Oxygen Reduction Reaction* – Jiajie Yan, Fudan University 123
- 2:10 *Spherical Nanocellulose Formates as Green Fillers to Improve Crystallization and Mechanical Property of Poly(lactic acid)* – Houyong Yu, Zhejiang Sci-Tech University 124
- 2:30 *Construction Nanomaterials for Modification of General Thermal Plastic Polymer Resin and Fiber* – Bin Sun, Donghua University 126
- 2:50 Break

Session Chair: Yumei Zhang

- 3:10 *Silk Fibroin Fibers and Scaffolds from Aqueous Solutions* – Yaopeng Zhang, Donghua University 127
3:40 *Green Graphene-Silk Nanocomposite Materials* – Xiao Hu, Rowan University 129
4:00 *In Situ Self-Assembly Nanocomposites from Electrospun Poly(lactic acid)/Lipid and Bacterial Cellulose Nanofibers* – Chunhui Xiang, Iowa State University 131
4:20 *Poly(ether ester) Alternative Multiblock Copolymers: Synthesis and High Resilience Properties* – Yingfeng Tu, Soochow University 133
4:40 *ZnS/Bacterial Cellulose/Epoxy Resin (ZnS/BC/E56) Nanocomposites with Good Transparency and Flexibility* – Shiyang Chen, Donghua University 134

No. 2 Teaching Building, Room 2109

Session: Functional Textiles and Clothing; Functional Finishing and Dyeing

Session Chair: Xiangwu Zhang

- 1:00 *Research on the Nanogenerators Based on Electrospun Polymeric Nanofiber Mats* – Hao Yu, Donghua University 139
1:30 *Characterizing Thermal Protective Fabrics of Firefighters' Clothing in Hot Surface Contact* – Guowen Song, University of Alberta (presented by Farzan Gholamreza) 140
1:50 *Fabrication of ZnO & SiO₂ with Eliminated Photocatalytic Activity for Preventing Wool Photoyellowing* – Lu Sun, Deakin University 142
2:10 *Dynamical Wettability Switch via Photoinduced F/TiO₂ for Cellulose Substrates* – Yunjie Yin, Jiangnan University 144
2:30 *Open*
2:50 *Break*

Session Chair: Guang Li

- 3:10 *Methodologies for High-Performance Electrospun Fibers* – Ton Peijs, Queen Mary University of London 146
3:40 *Role of Relative Humidity and Ca²⁺ Concentration on Molecular Assembly of Silk Fibroin* – Qingfa Peng, Donghua University 148
4:00 *Open*
4:20 *Open*
4:40 *Open*

No. 2 Teaching Building, Room 2105

Session: Fiber Applications in Medical, Transportation, and Energy; Natural Fiber Spinning, Weaving, and Knitting

Session Chair: Huili Shao

- 1:00 *Hydrogen-Bonding Polymer Complexation for Low-Dimensional Material Preparation* – Shuguang Yang, Donghua University 153
1:30 *Directly Deposited Si NP/CNT/PVA Nanofiber Anodes for Li-Ion Battery Application* – Yong Lak Joo, Cornell University 154
1:50 *Membranes of Manganese Oxide Beaded Carbon Nanofibers as High-Performance Flexible Anodes for Lithium Ion Batteries* – Xin Zhao, Donghua University 156
2:10 *Carbon Nanotube Sheet Electrodes for Anisotropic Actuation of Dielectric Elastomers* – Tushar Ghosh, North Carolina State University 158
2:30 *Open*
2:50 *Break*

Session Chair: Xungai Wang

- 3:10 *Design of Electrospun Hybrid Nanofibrous Materials for Biomedical Applications* – Xiangyang Shi, Donghua University 160
3:40 *Efficient Dissolution of Cellulose in Novel Complex Solvent and Its Spinning* – Yue Zhang, Donghua University 161
4:00 *Cellulose Multifilament Prepared from Cellulose Carbamates in NaOH/ZnO Aqueous Solutions on a Pilot Scale* – Jinping Zhou, Wuhan University 163
4:20 *Lower Modulus Research on Cellulose Diacetate Fiber* – Jiajun Wu, Donghua University 164
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No. 2 Teaching Building, Room 2106

Session: Synthesis, Structure, and Properties of Fiber-Related Materials

Session Chair: Donggang Yao

- 1:00 *Self-Healable, Super-Tough GO/PAA Nanocomposite Hydrogels Facilitated by Dual Cross-Linking Effects* 169
– Xu-Ming Xie, Tsinghua University
- 1:30 *Strengths of Fiber Products: Current and Historical Perspectives on Statistical Size Effects* – Moon Suh, 170
North Carolina State University
- 1:50 *Prediction of the Tensile Strength of a Two-Ply Polyester Filament Yarn* – Huang Wei, Donghua University 172
- 2:10 *Improvement of the Testing Instrument of Fabric-Skin Adhesion Properties* – Feng Ji, Donghua University 174
- 2:30 *Open*
- 2:50 *Break*

Session Chair: Dajun Chen

- 3:10 *Development of Novel Poly(p-phenylene terephthalamide)s* – Xinhua Wan, Peking University 176
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Nanomaterials and the Effective Reinforcement of Their Composites – Yan Wang, Donghua University
- 4:20 *Synthesis and Characterization of Melt Processable Acrylonitrile-N-Vinylimidazole Copolymers* – Na Han, 181
Tianjin Polytechnic University
- 4:40 *Open*

5:00–6:30 Dinner: Donghua Restaurant II (3F)

Wednesday, May 27

Morning

Plenary Lectures

No. 2 Teaching Building, Room 2137

Session Chair: Yiqi Yang

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- 9:30 *Crystal Networks in Fibrous Soft Materials: From Hierarchical Structure to Ultra-Performance* – Xiang 13
Yang Liu, National University of Singapore
- 10:00 *Break*

Session Chair: Rudolf Hufenus

- 10:20 *Wearable Fiber-Shaped Energy Harvesting and Storage Devices* – Huisheng Peng, Fudan University 14
- 10:50 *Exploring the Nature of Cellulose Microfibrils* – Benjamin Hsiao, Stony Brook University 15

11:20–11:50 Closing Ceremony

12:00–1:00 Lunch: Donghua Restaurant II (3F)

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