

The Fiber Society Fall Meeting and Technical Conference 2010

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Wednesday, October 20

- 7:30 Registration and Continental Breakfast, Ballroom Lobby, Level B
 8:15 Welcoming Remarks, Business, and Announcements *Agnes Ostafin, Chair*
Dominique Adolphe, President, Fiber Society
 8:30 Plenary Talk: Prof. Russell Stewart, Bioengineering, University of Utah
The Sticky Underwater Silk of Caddisflies...79

Morning Session

Ballroom 1, Level B

9:30– 10:00	<i>Advanced Energy-Storage Nanofibers of High-Energy Lithium-Ion Batteries...81</i> <u>Xiangwu Zhang</u> , North Carolina State University
10:00– 10:30	<i>Self-Detoxifying Nanoparticle-Enhanced Fabrics...83</i> <u>Mark K. Kinnan</u> ^{1,2} , Heidi L. Schreuder-Gibson ¹ , Kris Senecal ¹ , Benjamin J. Byard ¹ , Gianna Prata ¹ , Lev E. Bromberg ² , T. Alan Hatton ² , ¹ U.S. Army Natick Soldier Research, Development & Engineering Center, ² Massachusetts Institute of Technology
10:30	Break

Superior A, Level C

Superior B, Level C

	Session 1A: Technology Applications I <i>Cheryl Gomes, Chair</i>	Session 1B: Chemistry I <i>Jack Zhou, Chair</i>
11:00– 11:30	<i>Study the Effects of Fabric Structure on Power Conversion Efficiency of Photovoltaic Fabrics...3</i> <u>Anshul Agrawal</u> ¹ , Yong Kim ¹ , Paul Calvert ¹ , and Michael Lee ² , ¹ University of Massachusetts, ² Konarka Technology	<i>Application of Microwave Radiation to Enhance Accessibility and Activity of Enzyme Treatments of Cotton Seed Coat Fragments...39</i> <u>Ian R. Hardin</u> , Renuka Dhandapani, and Susan S. Wilson, University of Georgia
11:30– 12:00	<i>Measuring of Electrical Properties of Nanoweb of PAN Containing MWNT...5</i> <u>Laurence Schacher</u> , Almuhammed Sliman, Nabyl Khenoussi, Henri Balard, and Dominique Adolphe, ENSISA	<i>Anomalous Chair Fragmentation of Various Polymers in the Solution State by Ultrasonic Method: Clarification of the Mechanism by Using Monodispersed Poly(styrene)...40</i> <u>Masatomo Minagawa</u> ¹ , Makoto Shimizu ¹ , Takayuki Katoh ¹ , Chiaki Azuma ² , Nobuhiro Sato ³ , and Tomochika Matsuyama ³ , ¹ Yamagata University, ² Open University of Japan, ³ Kyoto University
12:00	Lunch On Your Own POSTER SETUP, Golden Cliff, Level B	

Afternoon Session

Superior A, Level C

Superior B, Level C

	Session 2A: Technology Applications II <i>Michael Ellison, Chair</i>	Session 2B: Chemistry II <i>Gajanan Bhat, Chair</i>
1:30– 2:00	<i>Sheet Resistance of Continuous Filament Nonwovens...9</i> <u>Thomas Godfrey</u> ¹ and Benoit Maze ² , ¹ U.S. Army Natick Soldier Research, Development & Engineering Center, ² The Nonwovens Institute	<i>Structure and Properties of Highly Oriented Poly(glycolide-co-lactide) Filaments and Their Changes During Hydrolytic Degradation...45</i> <u>J. Jack Zhou</u> and G. Gavin Chen, Ethicon, Inc.

2:00– 2:30	<i>Heat Transfer Through Fibrous Insulation with Superfine Reflective Fibrous Interlayers...11</i> <u>Jin-tu Fan</u> and Xian-fu Wan, Hong Kong Polytechnic University	<i>Characterization of a Reactive β-Cyclodextrin Containing Vinyl Group...46</i> <u>Malihe Nazi</u> ¹ , Reza Mohammad ¹ , Ali Malek ¹ , and Richard Kotek ² , ¹ Amirkabir University of Technology, ² North Carolina State University
2:30– 3:00	<i>Stand-Alone Nanofiber Webs as Energy Storage Separators...12</i> <u>Glen E. Simmonds</u> , DuPont Central Research & Development	

3:00	Break
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3:30– 4:00	<i>A Novel Approach for Efficient Utilization of Cotton into Nonwovens...14</i> <u>A. P. S. Sawhney</u> ¹ , Michael Reynolds ¹ , Chuck Allen, Ryan Slopek ¹ , Brian Condon, and Lawson Gary ² , ¹ Southern Regional Research Center, ² Wildwood Ginning	
4:00– 5:15	Student Paper Competition Ballroom 1, Level B Chair: Seshadri Ramkumar <u>Erin Hendrick</u> , Cornell University: <i>pH-Indicating Electrospun Fibers</i> <u>Jian Kang</u> , Kyoto Institute of Technology, <i>Preparation of Polycaprolatone/Soluble-Eggshell Membrane Nanofiber Webs with Catechin</i> <u>Xuri Yan</u> , Boston University: <i>Characterization of Jet Dynamics and Humidity Effect on Electrospun Fiber Diameter</i>	

Evening Session

Golden Cliff, Level B

6:00– 7:30	Reception Poster Presentations
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Dinner On Your Own

Thursday, October 21

7:30 Continental Breakfast, Ballroom Lobby, Level B

Morning Session

Superior A, Level C

Superior B, Level C

	Session 3A: Mechanical & Physical Properties Rudolf Hufenus, Chair	Session 3B: Medical Applications Stephen Michielsen, Chair
8:30– 9:00	<i>Experimental Study of Transverse Compression of Polyamide 6.6 Rovings</i> <u>S. El-Ghezal Jeguirim</u> , S. Fontaine, Ch. Wagner-Kocher, University of Mulhouse...17	<i>Textile Heart Valve Prosthesis: Novel Manufacturing Process and Prototype Performances...51</i> <u>Frederic Heim</u> ¹ , Bernard Durand ¹ , and Nabil Chakfe ² , ¹ ENSISA, ² Hôpitaux Universitaires de Strasbourg
9:00– 9:30	<i>Stressing Semisaturated Fibrous Materials During Wicking Experiments</i> <u>Daria Monaenkova</u> , Taras Andruk, and Konstantin Kornev, Clemson University...19	<i>Challenges in Advanced Nanofiber Wound Dressings...53</i> <u>Xiangwu Zhang</u> , Marian McCord, Quan Shi, Mohamed Bourham, Rupesh Nawalakhe, Narendiran Vitthuli, and Joshua Nowak, North Carolina State University

Ballroom 1, Level B

9:30– 10:00	<i>Multiscale Experiments and Simulations on Natural Fiber and Natural Fiber-Reinforced Plastic Composites...85</i> <u>Yibin Xue</u> , Utah State University
10:00– 10:30	<i>Stereolithographic Techniques to Create Complex 3D Biomimetic Tissue Engineering Scaffolds...87</i> <u>Brenda K. Mann</u> , University of Utah

10:30	Break
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Superior A, Level C**Superior B, Level C**

11:00– 11:30	<i>Mechanical Properties of PA-6 Electrospun Nanoweb...21</i> <u>Amir Houshang Hekmati</u> , Nabyl Khenoussi, Jean-Yves Drean, Dominique Adolphe, and Laurence Schacher, ENSISA	<i>Polyacrylates with Imidazole Sidechains Mimicking Bioadhesive of Sandcastle Worm</i> <u>Xin Fei</u> , Hui Shao, and Russell J. Stewart, University of Utah...54
11:30– 12:00	<i>Finite Element Simulation of Transverse Compression of Textile Tows...23</i> <u>Naima Moustaghfir</u> and Damien Durville, Ecole Centrale Paris	<i>Structure and Properties of Melt Blown PLA Micro- and Nanofiber Nonwovens...56</i> <u>Gajanan Bhat</u> ¹ , Chris Eash ¹ , Jonathan French ¹ , Kokouvi Akato ¹ , and Robert Green ² , ¹ University of Tennessee Knoxville, ² Nature Works

12:00	Lunch On Your Own
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Afternoon Session**Superior A, Level C****Superior B, Level C**

	Session 4A: Processing <i>Dominique Adolphe, Chair</i>	Session 4B: Characterization <i>Ian Hardin, Chair</i>
1:30– 2:00	<i>Control of Electrospun Fiber Diameter: Process Variations, Jet Dynamics, and Humidity Effects...27</i> <u>Xuri Yan</u> and Michael Gevelber, Boston University	<i>Analysis of the Microstructure of Bicomponent Fibers by Wide-Angle X-Ray Diffraction (WAXD)...61</i> <u>Rudolf Hufenus</u> and Felix A. Reifler, Empa
2:00– 2:30	<i>High-Performance Nylon-6 Nonwoven Fabrics by Electrospinning...29</i> <u>Chunhui Xiang</u> ¹ , Margaret W. Frey ¹ , and Kock-ye Law ² , Cornell University, Xerox Corporation	<i>Using Variable Homography Mathematical Model to Measure Hairiness for the Application on Textile Surface Monitoring...63</i> <u>Jun Xu</u> ^{1,3} , Stéphane Fontaine ² , Christophe Cudel ¹ , Sophie Kohler ¹ , Olivier Haerberlé ¹ , and Marie-Louise Klotz ^{3,4} , ¹ University of Haute-Alsace, ² ENSISA, ³ Niederrhein University of Applied Science, ⁴ Rhine-Waal University of Applied Science
2:30– 3:00		<i>Wool Fiber Surface High-Resolution Force Spectroscopy...65</i> <u>M. Ellison</u> , B. Zimmerman, J. Chow, B. Abbott, M. Kennedy, and D. Dean, Clemson University

3:00	Break
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3:30– 4:00		<i>Nonlinear Traces During Friction on Fibrous Materials: Towards New Estimators of Surface Quality...67</i> <u>Stéphane Fontaine</u> , Seydou Dia, and Marc Renner, ENSISA
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4:15–5:15 **General Body Meeting, Ballroom 1, Level B—Open to Fiber Society Members Only**
 6:00–7:00 **Reception, Golden Cliff, Level B**
 7:00 **Awards Banquet**
Speaker: Dr. William Parry, Department of Geology, University of Utah
Geological Evolution of Western North America from the Perspective of Snowbird, Utah...89

Friday, October 22

8:00 Continental Breakfast, Ballroom Lobby, Level B

	Superior A, Level C	Superior B, Level C
	Session 5A: Nanoparticle Enhancements <i>Laurence Schacher, Chair</i>	Session 5B: Fabrics <i>Mike Jaffe, Chair</i>
9:00–9:30	<i>Nanoreactors—A New Kind of Fade-Resistant Nanoparticle with Applications in Textiles...33</i> <u>Agnes Ostafin</u> ¹ , Hiroshi Mizukami ² , and Yen-Chi Chen ¹ , University of Utah, ² Nanoshell Company	<i>Study of the Effect of Test Speed and Fabric Weight on Puncture Behavior of Polyester Needle-Punched Nonwoven Geotextiles...71</i> Azadeh Seif Askari, Saeed Shaikhzadeh Najar, and Younes Alizadeh Vaghasloo, Amirkabir University of Technology (presented by Malihe Nazi)
9:30–10:00	<i>The Preparation of Soluble Egg Shell Membrane (SESM) Nanoparticles by Method of Precipitation with Catechin and Its Application in Polyurethane (PU) Nanofibers...35</i> <u>Chen Long</u> , Jian Kang, and Sachiko Sukigara, Kyoto Institute of Technology	<i>Color Coordinates and Differences of Naturally Colored Cotton and Their Correlation to Visual Affection...73</i> <u>Myungeun Lee</u> , Ahreum Han, Youngjoo Chae, and Gilsoo Cho, Yonsei University
10:00–10:30		<i>Oil Absorbing and Vapor Retaining Fibrous Mats...75</i> <u>Seshadri Ramkumar</u> ¹ , Vinitkumar Singh ¹ , Utkarsh Sata ¹ , Sudheer Jinka ¹ , Muralidhar Lalagiri ¹ , and Amit Kapoor ² , ¹ Texas Tech University, ² First Line Technologies
11:00	Close of Conference	

Poster Presentations

Golden Cliff, Level B

Session Chair: *Agnes Ostafin*

Jian Kang	<i>Preparation of Polycaprolactone/Soluble-Eggshell Membrane Nanofiber Webs with Catechin...93</i>
Filiz Avsar	<i>Quality Control for Technical Textiles...95</i>
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Erin Hendrick	<i>pH-Indicating Electrospun Fibers...106</i>