

THE FIBER SOCIETY

Fall 2001 ANNUAL TECHNICAL CONFERENCE

October 30 – November 1, 2001

LAKE TAHOE

Conference Co-Chairs
Ning Pan and You-Lo Hsieh

Organizing Committee
Subhash Batra
You-Lo Hsieh
Ning Pan
Haig Zeronian

Sponsored & Organized by:
Division of Textiles & Clothing
University of California at Davis, California
College of Agriculture and Environment Sciences
University of California at Davis, California

The Fiber Society Officers

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Room 3330, Nonwovens Cooperative Research Center
College of Textiles, North Carolina State University
Box 8301 or 2401 Research Drive
Raleigh, NC 27695-8301
<http://www.fibersociety.org>

October 20, 2001

Monday

1:00 PM – 5:00 PM Fiber Society Governing Council meeting

7:00 PM – 9:00 PM Early birds reception & registration

October 30, 2000

Tuesday

7:15 AM Registration

8:15 AM Welcome

Ning Pan

President, The Fiber Society

You-Lo Hsieh

Conference Co- Chair

SESSION I: FIBER PROPERTIES AND PROCESSING

8:30 AM CREATIVITY IN THE FIBRE AND TEXTILE INDUSTRIES: PAST LESSONS AND FUTURE PROSPECTS

John W. S. Hearle

Department of Textiles, UMIST, Manchester, UK

9:15 AM THERMOMECHANICAL AND DIMENSIONAL STABILITY OF TEXTILE MATERIALS

Ron Postle

University of New South Wales, Sydney, 2052, Australia

9:45 AM 3-D NUMERICAL ANALYSIS OF MELT SPINNING: DIRECT PREDICTION OF FIBER SHAPE AND INVERSE DESIGN OF SPINNERET

Junsuo Sun¹ and Bernard Hocq²

¹Fluent Inc., Lebanon, NH; U.S.A.

²Polyflow s.a., B-1348 Louvain-La-Neuve, Belgium

10:15-10:30 AM BREAK

10:30 AM SCANNING TUNNELING MICROSCOPY STUDY OF RAYON-BASED CARBON FIBERS

QilinWu¹, Yang Hu¹, Gang Li², Ding Pan¹

¹College of Mat. Sci.& Eng., Donghua University, Shanghai, China

²Jiaotong University, China

11:00 AM HYDROGEL SPINNING – TURNING GELS INTO FIBERS AND YARNS

A.Hawkins, G. Buschle-Diller

Textile Engineering Department, Auburn University, Auburn, AL, USA

11:30 AM STUDY ON THE INDIRECT DISSOLVING PROCESS OF CELLULOSE IN NMMO

Xuechao Hu, Guangxin Gu and Huili Shao

State Key Lab. for Modification of Chemical Fibers and Polymeric Materials,

Dong Hua University, Shanghai, China

SESSION II: FABRICS/ASSEMBLIES I

1:30 PM THE EFFECT OF YARN NON UNIFORMITY ON THE STABILITY OF THE RING-SPINNING BALLON
W. Barrie Fraser
School of Mathematics and Statistics, The University of Sydney, New South Wales 2006, Australia

2:00 PM ANALYSIS OF ENERGY DISSIPATION IN TWISTED FIBER BUNDLES UNDER CYCLIC TENSILE LOADING
Y. Qiu¹, Y. Wang², M. Laton² and J.Z. Mi³
¹Department of Textile Engineering, Chemistry and Science, North Carolina State University, Raleigh, NC, USA
²School of Textile and Fiber Engineering, Georgia Institute of Technology, Atlanta, GA, USA
³Cotton Inc., Cary, NC, USA

2:30 PM BIREFRINGENCE DISTRIBUTION OF HIGH STRENGTH PET FIBRES MEASURED BY SENARMONT COMPENSATION METHOD
Weidong Yu
College of Textiles, Donghua University, Shanghai, China

3:00-3:15 PM BREAK

3:15 PM DEVELOPMENT OF SENSORY ANALYSIS APPLIED TO TEXTILE GOODS
Flora Philippe¹, Laurence Schacher¹, Dominique Adolphe¹, Catherine Dacremont²
¹Ecole Nationale Supérieure des Industries Textiles de Mulhouse Laboratoire de Physique et Mécanique Textiles, Rue Alfred Werner- F-68093 MULHOUSE CEDEX, France
²Ecole Nationale Supérieure de Biologie Appliquée à la Nutrition et à l'Alimentation, Equipe de recherche, DIJON, France

3:45 PM INFLUENCE OF MICRO- AND MESO-SCOPIC PROPERTIES ON MACROSCOPIC LEVEL FOR WEFT KNITTED FABRICS
Marie-Ange Bueno, Marc Renner and Marie Jose
PACEcole Nationale Supérieure des Industries Textiles de Mulhouse, University of Mulhouse, France

4:15 PM ANNUAL MEMBERSHIP BUSINESS MEETING

5:00 PM -7:00 PM POSTER SESSION

October 31, 2000
Wednesday

SESSION III: FABRICS/ASSEMBLIES II

- 8:30 AM SENSING BY FIBRE GRATING SENSORS INTEGRATED IN SMART TEXTILE STRUCTURES
Xiaoming Tao
Institute of Textiles and Clothing, The Hong Kong Polytechnic University, Hong Kong
- 9:00 AM THE ELASTIC RESPONSE OF WOVEN KEVLAR FABRIC
William E. Warren
Department of Mechanical Engineering, University of New Mexico Albuquerque, NM, USA
- 9:30 AM HEAT AND MASS TRANSFER FROM FABRIC-COVERED CYLINDERS: WIND CHILL, BREATHABILITY, AND THERMAL INSULATION
Phillip Gibson
AMSSB-RSS-MS, U.S. Army Soldier Systems Center, Natick, MA 01760-5020, USA
- 10:00 AM APPLICATIONS OF THE SINGLE FIBER LENGTH DATA FROM AFIS AND FROM COMPUTER SIMULATIONS IN COTTON RESEARCH
Xiaoliang "Leon" Cui¹, Timothy A. Calamari, Jr.¹, Kearny Q. Robert, Jr.¹, and Michael D. Watson²
¹USDA, ARS, Southern Regional Research Center, New Orleans, LA, USA
²Michael D. Watson, Cotton Incorporated, Raleigh, NC, USA
- 10:30-10:45 AM BREAK**
- 10:45 AM THE SLIT-DAMAGE TOLERANCE OF COATED PLAIN WEAVE FABRIC
Thomas A. Godfrey¹ and John N. Rossettos²
¹Natick Soldier Center, U.S. Army Soldier & Biological Chemical Command, Natick, MA 01760-5020, USA
²Department of Mechanical, Industrial and Manufacturing Engineering, Northeastern University, Boston, MA 02115, USA
- 11:15 AM APPLICATION OF FRACTAL DIMENSION FOR TEXTILES PLANAR HETEROGENEITY CHARACTERIZATION
Jiri Militky
Department of Textile Materials, Technical University of Liberec, Czech Republic
- 11:45 AM FABRIC FRICTION TESTING – A NEW APPROACH
Bernard Miller,
TRI / Princeton, NJ, USA

SESSION IV: FABRICS/ASSEMBLIES III

- 1:30 PM A FINITE DIFFERENCE MODEL OF THE DYNAMIC BEHAVIOR OF YARN
Davide Maccabruni
Institute for Manufacturing Automation, ETH Zurich
- 2:00 PM COMPARATIVE ANALYSIS OF THERMOINSULATION PROPERTIES OF FABRICS MADE OF CELLULOSE FIBERS: NATURAL, MAN MADE.
I. Frydrych^{1,2}, G. Dziworska¹, J. Bilka²
¹Institute of Textile Architecture, Lodz, Poland
²Technical University of Lodz, Lodz, Poland
- 2:30 PM RELATIONSHIP BETWEEN SUGAR PROPERTIES AND STICKINESS MEASUREMENTS
E. Hequet¹, N. Abidi¹, and M. Watson²
¹International Textile Center, Texas Tech University, Lubbock, TX, USA
²Cotton Incorporated, Cary, NC, USA

SECTION V: STUDENT PAPER COMPETITION

- 3:00 PM Student Presentation I (to be added)
- 3:30 PM Student Presentation II (to be added)
- 4:00 PM Student Presentation III (to be added)
- 6:00 PM RECEPTION**
- 7:00 PM DINNER**
After Dinner Talk on “LAKE TAHOE”
Prof. Charles R. Goldman
Director, Lake Tahoe Research Center
UC Davis

November 1, 2001
Thursday

SESSION VI: GENERAL

- 8:30 AM DISCRETE SIMULATION FOR CONCEPTION AND DEVELOPMENT OF
AUTOMATION IN MANUFACTURING
Urs Meyer
Institute for Manufacturing Automation, ETH Zurich
- 9:00 AM INFLUENCE OF FIBERS GEOMETRY ON THE POLYESTER YARNS
PACKING DENSITY AND POROSITY
Dana Kremenáková¹ and Arun Pal Aneja²
*¹Department of Textile Structures, Technical University of Liberec, Czech
Republic*
²E.I. DuPont, Kinson USA
- 9:30 AM A STRUCTURED MODEL FOR ENERGETIC AND EXERGETIC ANALYSIS
OF PRODUCTION SYSTEMS
Andrea Weber Marin
Institute for Manufacturing Automation, ETH Zurich
- 10:00-10:15 AM BREAK**
- 10:15 AM INTERACTION OF A LIQUID WITH PARALLEL FIBRES
David Lukas, Jiri Chaloupek
Technical University of Liberec, Liberec, Czech Republic
- 10:45 AM DURABLE AND REGENERABLE ANTIBACTERIAL AND ANTI-
CHEMICAL TEXTILES
Gang Sun
Division of Textiles and Clothing, University of California, Davis, CA, USA
- 11:15 AM THE APPLICATION OF AIR-FLOW TO THE TECHNOLOGICAL PROCESS
OF CHEMICAL FIBER
Qiliang Cui, Ailian Xu, Ming Chen
Dong Hua university, Shanghai China
- 11:45 AM ADJOURN**

POSTERS:

1. COTTON FIBRES PROPERTIES: GENETIC FACTOR OR GROWING CONDITIONS
Rosa Vasconcelos, Teresa Amorim, Fátima S. Lucas
Departamento de Engenharia Têxtil, Universidade do Minho – Escola de Engenharia, Campus de Azurém, 4800 Guimarães, Portugal. Tel. +351-53-510280
2. USING CLEMENTINE DATA MINING SYSTEM IN THE PROCESS OF ANALYSIS OF COTTON FIBER PROPERTIES
Sílvia Dias, Rosa Vasconcelos, Maribel Santos, M^a Teresa Amorim, Luís Amaral
Universidade do Minho, Campus de Azurém, 4800-058 Guimarães, Portugal
3. CHANGES OF STATIC AND DYNAMIC DRAPE COEFFICIENTS OF POLYESTER-FIBER WOVEN FABRICS BY ALKALI WEIGHT REDUCTION
Mitsuo Matsudaira and Minzhang Yang
Kanazawa University, Kakuma-machi, Kanazawa City, 920-1192, Japan
4. USING INTERNET DISTRIBUTED COMMUNICATION IN MANAGEMENT A TEXTILE RESEARCH PROJECT
Pedro Bastos, Luís Amaral, Maribel Santos, Teresa Amorim, Rosa Vasconcelos, ,
Universidade do Minho, Campus de Azurém, 4800-058 Guimarães, Portugal
5. INCREASING THE END-USE POTENTIAL OF WOOL FIBERS FROM NATIVE SHEEP BY INCREASING THE FIBER SOFTNESS AND REDUCING THE SHRINKAGE OF COARSE WOOL FIBERS
M. Michelle Hartzell-Lawson. Utah State University, Logan, UT, USA
6. LYOCELL FIBER IN CHINA
Xuechao Hu. Dong Hua University, Shanghai, China
7. COMPUTER SIMULATION OF LYOCELL PROCESS
Huili Shao, Ruigang Liu and Xuechao Hu
State Key Lab. for Modification of Chemical Fibers and Polymeric Materials, Dong Hua University, Shanghai, China
8. AIR-FLOW ANALYSIS FOR BCF TEXTURING TUBE
Qiliang Cui, Ailian Xu, Ming Chen,
Dong Hua University, Shanghai China
9. ANALYSIS OF THE MELT SPINNING PROCESS BY FINITE ELEMENTS
Christine Harder, M.Sc., Mechanical Engineering, Institute for Manufacturing Automation, ETH Zurich
10. COLOR DEPTH OF PET FABRICS WITH NANO SIZED METALLIC POWDER
Eun Ji Lee¹, Sung Hoon Jeong¹, Beom Soo Lee², Bum Hoon Lee¹ and Jae Yun Jaung¹
¹Department of Textile Engineering, Hanyang University, Seoul, Korea
²KITECH, Shiheung-si, Gyeonggi-do, Korea

11. COMPRESSION OF PERPENDICULARLY LAID NONWOVENS WITH LOCAL STRUCTURAL VARIATION
Jaroslav Hanuš, Jiří Militky¹, Arun Pal Aneja²
Dept of Nonwovens, ¹Department of Textile Materials, Technical University of Liberec, Czech Republic ²E.I. DuPont, Kinson USA
12. HEMP AS A TEXTILE RAW MATERIAL FOR THE COTTON SPINNING PROCESS
Marianne Leupin, Institute for Manufacturing Automation, ETH Zurich
13. INFLUENCE OF THE TEST CONDITIONS ON THE COTTON FIBRES PHYSICS PROPERTIES
António Matos, Rosa Vasconcelos, Maribel Santos, Teresa Amorim, Luís Amaral
University of Minho, Campus de Azurém, 4800-058 Guimarães, Portugal
14. A STUDY OF MULTIFUNCTIONAL MODIFICATIONS OF TEXTILE MATERIALS BY USING SIMULTANEOUS FINISHING AND DYEING PROCESSES
Minghua Ma and Gang Sun
Division of Textiles and Clothing, University of California, Davis, CA
15. FABRIC EVALUATION: AN EXPERIMENT USING FRICTORQ
Mário Lima¹, Rosa Vasconcelos², Lubos Hes³, Jorge Martins¹
¹Department of Mechanical Engineering, Mechatronics Laboratory
²Department of Textile Engineering, University of Minho, School of Engineering, 4800-058 Guimarães, Portugal
³Technical University of Liberec, Czech Republic
16. IMPACT ASSESSMENT IN THE LIFE CYCLE OF TEXTILE COTTON FABRICS
Marion Tobler, Institute for Manufacturing Automation, ETH Zurich
17. EXPERIMENTAL INVESTIGATION OF HIGH SPEED YARN UNWINDING
Chantal Spleiss, Institute for Manufacturing Automation, ETH Zurich
18. A STUDY OF THERMAL STABILITY OF HALAMINE STRUCTURES IN REGENERABLE ANTIBACTERIAL TEXTILES
Lei Qian and Gang Sun
Division of Textile and Clothing, University of California, Davis, CA
19. ON POISSON'S RATIOS OF WOVEN FABRICS
Huiyu Sun¹, Ning Pan¹ and Ron Postle²
¹Division of Textiles and Clothing, University of California, Davis, CA, USA
²University of New South Wales, Sydney, Australia
20. PROPERTIES AND PROCESSING OF PLANT FIBER
Chongwen Yu, China Textile University, Shanghai, China
21. THE PREPARATION AND CHARACTERIZATION OF PP/AG NANOCOMPOSITE FIBER
Sang Young Yeo, Sung Hoon Jeong, Seong Geun Oh
Division of Applied Chemical Engineering, Hanyang University, Seoul, Korea
22. STUDIES ON THE STRUCTURE AND MECHANICAL PROPERTIES OF COMPOSITE YARNS
Xiongying Wu¹ and Shanyuan Wang²
¹Shanghai Entry-Exit Inspection and Quarantine Bureau, Shanghai
²College of Textiles, Donghua University, Shanghai, China

23. IDENTIFICATION OF “FREE FORMALDEHYDE” ON DURABLE PRESS FINISHED TEXTILE INTERLININGS
Bojana Voncina¹, Alenka le Marechal¹, Stane Kuralt², Dominika Bezek²
¹*University of Maribor, Textile Department, Smetanova 17, 2000 Maribor, Slovenia,*
²*Tekstilna tovarna ZVEZDA, Savska cesta 46, 4000 Kranj, Slovenia*
24. MEASUREMENTS OF THERMAL INSULATION OF PP NONWOVEN ON THE ALAMBETA DEVICE
I. Frydrych^{1, 2}, G. Dziworska¹, D. Piróg²
¹*Institute of Textile Architecture, Lodz, Poland*
²*Technical University of Lodz, Lodz, Poland*
25. FAST PARAMETERS RELATED TO THE FACTORS LIKE A KIND OF WEAVES, YARN FIBRES COMPOSITION AND WAY OF FINISHING
I. Frydrych^{1, 2}, L. Hunter³, M. Matusiak¹, G. Dziworska¹
¹*Institute of Textile Architecture, Lodz, Poland;*
²*Technical University of Lodz, Lodz, Poland;*
³*CSIR TEX TECH, Port Elizabeth, RPA*
26. UNIVERSAL DYEING OF FABRICS WITH NANO-SIZED PIGMENT PARTICLES
Dapeng Li and Gang Sun
Division of Textiles and Clothing, University of California, Davis, CA, USA
27. EFFECTS OF PROCESSING PARAMETERS ON THE PREPARATION OF CARBON NANOTUBES FILM BY ELECTROPHORETIC DEPOSITION
Chunsheng Du and Ning Pan
Division of Textiles and Clothing, University of California, Davis, CA, USA
28. ERGONOMIC STUDY OF CARPETS: MECHANICAL MODELING AND BIOMECHANICAL & PHYSIOLOGICAL ASSESSMENT OF CARPET COMFORT
Jianhua Wu and Ning Pan
Division of Textiles and Clothing, University of California, Davis, CA, USA
29. A STUDY ON THE CRYSTALLIZATION BEHAVIOR OF POLYTRIMETHYLENE TEREPHTHALATE (PTT)
Xiangan Huang and Xiaoyun Liu
State Key Lab. For Modification of Chemical Fibers and Polymer Materials Dong Hua University, Shanghai, China
30. TRENDS OF AFIS APPLICATION IN INDUSTRY AND RESEARCH
I. Frydrych^{1, 2}, M. Matusiak¹
¹*Institute of Textile Architecture, Lodz, Poland*
²*Technical University of Lodz, Lodz, Poland*
31. ANALYSIS OF NETWORK ECONOMIC IN INDUSTRY OF TEXTILE & FASHION
X.D. Zhou and Y.M. Li
Fashion College, Shanghai University of Engineering Science, China
32. CHINA INDUSTRY OF TEXTILE AND CLOTHING DEVELOPED BY INTERNET
X. D. Zhou. Fashion College, Shanghai University of Engineering Science, China

33. Ultra-thin Protein Membrane by Electrospinning and its Application for Enzyme Immobilization
Jiangbing Xie and You-Lo Hsieh
Fiber and Polymer Science, University of California, Davis, CA
34. SURFACE METHYLATION AND COPOLYMERIZATION ON CELLULOSE NANOFIBER,
Haiqing Liu and You-Lo Hsieh
Fiber and Polymer Science, University of California, Davis, CA
35. CELLULOSE SUBSTRATES FUNCTIONALIZED BY DIACYLCHLORIDE (DAC)
Yuhong Wang and You-Lo Hsieh
Fiber and Polymer Science, University of California at Davis, Davis, CA
36. DUAL SENSITIVE HYDROGEL-NONWOVEN COMPOSITES
Hong Chen and You-Lo Hsieh
Fiber and Polymer Science, University of California at Davis
37. DYEING BEHAVIOR OF DIFFERENT COTTON SPECIES
Lisa Cram and You-Lo Hsieh
Division of Textiles and Clothing, University of California, Davis, CA
38. CHARACTERIZATION OF PROTEOLYTIC DIGESTION OF WOOL BY AN EXTRACELLULAR ALKALINE PROTEASE OF *ASPERGILLUS FLAVUS*
J. M. Cardamone¹, K. Sethumadhavan², J. H. Ullah², J.W Cary² and D. Bhatnagar²
¹*USDA, ARS, Eastern Regional Research Center, Wyndmoor, PA*
²*USDA, ARS, Southern Regional Research Center, New Orleans, LA*
39. NEURAL NETWORKS FOR FABRIC DRAPE PREDICTION
Hakan Gokee¹, Muthu Govindaraj¹, Andrew Palumbo¹ and Amar Raheja²
¹*School of Textiles and Materials Technology, Philadelphia University, Philadelphia, PA, USA*
²*Department of Computer Science, California Polytechnic State University, Pomona, CA, USA*
40. RETROFLECTION OF TRANSPARENT ROUND SECTION FIBER
H.Q. Zhang, W.D. Gao and H. Qiu
Institute of Textiles and Garment Design, Southern Yangtze University, Wuxi, Jiangsu, 214036, China
41. SIMPLE METHOD FOR DETERMINATION OF DRAPE OF WOVEN FABRICS
Lubos Hes, Ludmila Fridrichova. Itechnical University of Liberec, Czech Republic
42. CONTROLLED ABRASIVE WEAR AND FIBRILLATION ON FIBROUS SURFACES
Stephane Fontaine. Ecole Nationale Supérieure des Industries Textiles de Mulhouse, University of Mulhouse, France

43. Modeling and Analysis of Liquid Wetting in Fibrous Assemblies
W. ZHONG¹, X. DING¹ AND Z.L. TANG²
*¹ College of Textiles, ² College of Material Science and Engineering,
China Textile University, Shanghai 200051, P. R. China*
44. Durable and Regenerable Antimicrobial Textile Materials Prepared by a
Continuous Grafting Process
Yuyu Sun and Gang Sun
Division of Textiles and Clothing, University of California, Davis, CA, USA
45. PHYSICAL PROPERTIES OF LYOCELL FABRICS
Majda Sfiligoj Smole, Simona Strnad, Kristina Stakne
*Laboratory for Characterization and Processing of Polymers,
Faculty of Mechanical Engineering, University of Maribor,
Smetanova 17, SI 2000 Maribor, Slovenia*
46. Characteristics of Shape Memory Polyurethane Films with Different Casting
Temperatures J. L. Hu¹, Y. M. Zeng¹, and H. J. Yan²
*¹ Institute of Textiles and Clothing, The Hong Kong Polytechnic
University, Hung Hom, Kowloon, Hong Kong*
² College of Textiles, Donghua University, Shanghai, P.R. of China.