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
President
Ning Pan

Vice-President
Gail Eaton

Secretary-Treasurer
Subhash K. Batra / Bhuvenesh C. Goswami

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
   Qilin Wu¹, 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 Dacremon²
   ¹Ecole Nationale Supérieure des Industries Textiles de Mulhouse Laboratoire de Physique et Mécánique 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-SOPIC PROPERTIES ON MACROSCOPIC LEVEL FOR WEFT KNITTED FABRICS
   Marie-Ange Bueno, Marc Renner and Marie Jose
   PACEcole Nationale Superieure des Industries Textiles de Mulhouse, University of Mulhouse, France

4:15 PM ANNUAL MEMBERSHIP BUSINESS MEETING

5:00 PM -7:00 PM POSTER SESSION
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
Jirí 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\textsuperscript{1,2}, G. Dziworska\textsuperscript{1}, J. Bilska\textsuperscript{2}
\textsuperscript{1}Institute of Textile Architecture, Lodz, Poland
\textsuperscript{2}Technical University of Lodz, Lodz, Poland

2:30 PM  RELATIONSHIP BETWEEN SUGAR PROPERTIES AND STICKINESS MEASUREMENTS
E. Hequet\textsuperscript{1}, N. Abidi\textsuperscript{1}, and M. Watson\textsuperscript{2}
\textsuperscript{1}International Textile Center, Texas Tech University, Lubbock, TX, USA
\textsuperscript{2}Cotton 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
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, Mª 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, Shihueung-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, Scholl 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
¹University of Maribor, Textile Department, Smetanova 17, 2000 Maribor, Slovenia,
²Tekstilna tovarna ZVEZDA, Savska cesta 46, 4000 Kranj, Slovenia
24. MEASUREMENTS OF THERMAL INSULATION OF PP NONWOVEN ON THE ALAMBETA DEVICE
I. Frydrych¹, ², G. Dziworska¹, D. Piróg²
¹Institute of Textile Architecture, Lodz, Poland
²Technical 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. Frydrych¹, ², L. Hunter³, M. Matusiak¹, G. Dziworska¹
¹Institute of Textile Architecture, Lodz, Poland;
²Technical University of Lodz, Lodz, Poland;
³CSIR 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. Frydrych¹, ², M. Matusiak¹
¹Institute of Textile Architecture, Lodz, Poland
²Technical 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 METHYACYLATION 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  
   ¹USDA, ARS, Eastern Regional Research Center, Wyndmoor, PA  
   ²USDA, ARS, Southern Regional Research Center, New Orleans, LA

39. NEURAL NETWORKS FOR FABRIC DRAPE PREDICTION  
   Hakan Gokee¹, Muthu Govindaraj¹, Andrew Palumbo¹ and Amar Raheja²  
   ¹School of Textiles and Materials Technology, Philadelphia University, Philadelphia, PA, USA  
   ²Department 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 Superieure 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.