

6th Textile Bioengineering and Informatics Symposium Proceedings (TBIS 2013)

Xi'an, China
26-28 September 2013

Volume 1 of 2

Editors:

**Yi Li
Mu Uap**

**Yong Gao
Jia-Shen Li**

ISBN: 979-8-3313-0726-4

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571

Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2013) by Textile Bioengineering and Informatics Society (TBIS)
All rights reserved.

Printed with permission by Curran Associates, Inc. (2024)

For permission requests, please contact Textile Bioengineering and Informatics Society (TBIS)
at the address below.

Textile Bioengineering and Informatics Society (TBIS)
Unit 503, 5/F. Silvercord
Tower 2, 30 Canton Road
Tsim Sha Tsui
Hong Kong

Phone: (852) 66382781

tbis@tbisociety.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

PROCEEDINGS OF TBIS 2013

TABLE OF CONTENT

Track 1 Textile Material Bioengineering

1	Carbon Nanofibers from Lignin – a Renewable Resource <i>Li-Ting Lin, Ying-Jie Li, Frank Ko</i>	1
2	Biomedical Functions of Keratin Peptide and its Applications <i>Jia-Shen Li, Yi Li, Xuan Liu, Jing Zhang, Zheng Zhao, Gang Li, Yan-Xia Han</i>	13
3	Synthesis and Characterization of PANI/PVA Membrane <i>Xiang-Qin Wang, Bin-Jie Xin, Jian Xu</i>	24
4	Study on Photocatalytic Degradation of Methyl Orange Dye with N-doped Nano-TiO ₂ <i>Ya-Ming Feng, Xiao-Ling Guo, Guo-Dong Shen, Xiang-Dong Wang, De-Ping Ben, Kui Zhang</i>	32
5	Study on the Effects of Electro-spinning Settings on the Properties of Polyester Micro-fiber <i>Cui-Cui Shen, Bin-Jie Xin</i>	37
6	Study on Hydrophobic Treatment of Nano-TiO ₂ <i>Huan-Huan Ren, Qing-Wen Song, Jian-Wei Xing</i>	46
7	Preparation and Study of Perfumed Regenerated Cellulose Fiber <i>Li Yue, Lan-Ping Shen, Bo-Jun Xi, Die Wang</i>	53
8	Preparation and Thermal Stability of Pd-doped Organic-inorganic Hybrid Silica Materials in Air Atmosphere <i>Jing Yang, Ya-Li Wang, Bao-Song Li, Yue Li</i>	60
9	The Test and Characterization of WATOS Fiber and Yarn <i>Bao-Hong Zhang, Jia-Guang Meng, Meng-Meng Guo</i>	66
10	Studies on Wearability and Comprehensive Evaluation of Knitted Fabric made of WATOS Fiber <i>Jia-Guang Meng, Bao-Hong Zhang, Meng-Meng Guo</i>	71
11	Research on Scouring and Bleaching Process of Banana Fiber Knitted Fabric <i>Yong Liang, Jia-Guang Meng, Min Wan</i>	76
12	The Wearability Test and Comprehensive Evaluation of Knitted Fabric made of EKS Heat-generating Fiber <i>Jing Cao, Jia-Guang Meng, Ling Li</i>	82
13	Studies on Properties of Pearl Fiber and Yarn <i>Xu-Feng Dong, Jia-Guang Meng, Yin-Ying Yang</i>	88
14	Study on the Properties of Cleancool Fiber and Yarn <i>Li Yang, Yan-Jun Liu</i>	93
15	The Research and Development of Seaweed Fiber Knitted Fabric <i>Bing-Yan Wei, Yan-Jun Liu</i>	98

16	Studies on Basic Properties of Hismer Fiber and Yarn <i>Meng Tian, Jia-Guang Meng, Cai-Xia Zhao</i>	105
17	The Wearability Test and Comprehensive Evaluation of Knitted Fabric made of Viloft Fiber <i>Wen-Xiang Ji, Jia-Guang Meng, Jing-Jing Li</i>	110
18	Preparation and Characterization of Polyurea Microcapsules Containing Butyl stearate as a Phase Change Material through Interfacial Polymerization <i>Shao-Feng Lu, Jian-Wei Xing, Yan Ren, Qin Wu</i>	115
19	Tests and Analysis on the Properties of Parster Fiber <i>Qi-Chi Yu, Shu Zhao</i>	121
20	Research on Mechanical Properties of Flexible Warp Knitting Metal Mesh <i>Guang-Wei Shao, Jin-Hua Jiang, Ting Fu, Dong-Fang Zhuo, Nan-Liang Chen</i> ...	125
21	Microencapsulated Phase Change Materials and Thermal-Regulating Fabrics <i>Jian-Wei Xing, Cheng-Shu Xu, Ren Yan, Wen-Zhao Shi, Jin-Shu Liu</i>	131
22	Preparation and Properties of Natural Plant Fly Expelling Microcapsule and Fabric <i>Jin-Mei Wang, Qian Wu</i>	137
23	Cytotoxicity and Cellular Uptake of Silk Fibroin Nanoparticles Prepared in Supercritical CO ₂ <i>Zheng Zhao, Yu Zhang, Yi Li, Ai-Zheng Chen, Mao-Bin Xie, Jing Zhang</i>	143

Track 2 Textile Biomedical Engineering

24	Piezoelectric Thin Polymer Film and Nanofiber Web based Sensors Applicable to Smart Textiles for Monitoring Vital Signals and Evaluating Energy Expenditure <i>So Young Lee, Kap Jin Kim</i>	153
25	Study of Jute Nanofiber as a Natural Biosorbent for Efficient Remediation of Hg ²⁺ Ion from Aqueous Environment <i>Vijay Baheti, Vinod Vellora Thekkae Padi, Jiří Militký, Miroslav Černík</i>	161
26	Degradation Evaluation of a Novel Composite Nanofibrous Electrospun Biopolymer Membrane <i>Jing Zhang, Yi Li, Jia-Shen Li, Zheng Zhao, Jun-Yan Hu, Gang Li</i>	166
27	A Research on the Basic Properties of Siwear Thermoregulation Fiber and Yarn <i>Qing Liu, Jia-Guang Meng, Bian-Xia Liu</i>	174
28	Research on Heat and Moisture Comfort Properties of Nano Far Infrared Knitted Thermal Underwear <i>Zheng Liu, Shuai Liu, Xiu-E Bai</i>	179
29	Special Properties of Poly Silk Peptide <i>Ming-Ming Ma</i>	184
30	Potential Strategies based on Cellular Mechanisms to Reduce Oxidative Stress in Obesity <i>Xiao-Fen Lin, Yi Li, Hang-Mei Leung</i>	190

31	A Novel Antitumor Drug-loaded Biodegradable Stent for the Treatment of Colorectal Cancer <i>Gang Li, Yi Li, Ping Lan, Jia-Shen Li, Hong Hu, Wen-Zu Wang, Yu-Ling Li, Jun-Yan Hu</i>	200
32	A Requirement-oriented Survey of Functional Performance of Patient Apparel Design <i>Yong-Jin Wang, Ping Zhao, Wen Gao, Yuan-Yuan Gao</i>	209
33	Expression and Functional Evaluation of Recombinant Bmlebobin3 <i>Xuan Liu, Yi Li, Zhi Li, Xi-Qian Lan, Polly Hang-Mei Leung, Jia-Shen Li</i>	216
34	Study on the Properties of Chitin Fiber and its Products Development <i>Xiao-Fang Feng, Yan-Jun Liu</i>	223
35	Optimization of Bmlebobin3 Expression using Design of Experiment <i>Zhi Li, Yi Li, Xuan Liu, Xi-Qian Lan, Polly Hang-Mei Leung, Jia-Shen Li, Frank Ko, Ling Qin</i>	230
36	The Wearability Test and Comprehensive Evaluation of Knitted Fabric made of Jade Fiber <i>Wen-Juan He, Jia-Guang Meng, Ya-Wei Wang</i>	240
37	Application of Supercritical Fluid Technique in Preparation of Active Protein Microparticles <i>Mao-Bin Xie, Yi Li, Zheng Zhao, Ai-Zheng Chen</i>	247

Track 3 Textile Bioengineering Process

38	Optimization of Sodium Hydroxide Treatment of Para-aramid Fibre for Cationic Dyeing <i>Dong Xia, Li-Jing Wang</i>	256
39	An Evaluation on the Salt-free Reactive Dyeing Property of Modified Cotton Fabric with Cationic Chicken Feather Keratin Agent <i>Xue-Yan Wang, Yuan-Jun Liu</i>	261
40	Features of Fabric Colors Dyed using Plant Dyes <i>Yue-Ping Wang, Fu-Qiang Wang, Hai-Jian Wang, Ling Li</i>	271
41	Investigation and Economic Analysis of using Evaporative Cooling Technology in Air Conditioning Forms in Textile Mills <i>Chen Wei, Xiang Huang, Hai-Hong Huo, Xiang-Long Song</i>	277
42	Effect of Dyeing and Finishing on Fogging Characteristic of Bast Fabric in Automotive Industry <i>Ying Chen, Fan-Qin Yu, Yong-Hua Xu, Chun-Xiao Yu</i>	286
43	Study on the Combination of Knotwork and Home Textile Accessories <i>Tian-Xi Lu, Zhao-Hua Liang</i>	291
44	Research on the Effect of Alkali Treatment on the Properties of Polyester/Cotton Fabric <i>Long Li, Ya-Mei Zhao, Jia-Xin Li</i>	298

45	The Relevance Property Tests for Plasma Treatment Wool Fabric with Reagents Adhesion <i>Jian Li, Jian-Zhong Yang, Meng-Qi Tian</i>	303
46	Study on New Preparation Technology for Part-gelatinization Seriflux <i>Yi-Chen Tang, Yan-Qin Shen, Hai-Liang Wu</i>	308
47	Probe into Chemical-ultrasonic Degumming for Pueraria Fiber <i>Yang-Yang Liu, Guang-Yin Xie, Chang-Chun Wu, De-Yu Ji</i>	316
48	The Influence of the Instantaneous Polymerization Processing Parameters on the Sizing Properties of AM-VAc Solid Copolymer <i>Hai-Liang Wu, Yan-Qin Shen, Ning-Tao Mao</i>	321
49	Study on a New Way of the Arrangement Method of Bra Sewing Production Line Process <i>Qian Zhang, Xin Zhang, Xiao-Ying Dong</i>	328
50	Study of K5 on Sizing Process to Polyester/Cotton Blended Yarn <i>Wen-Jing Gu, Hai-Liang Wu, Yan-Qin Shen</i>	336
51	Studies on the Dyeing Process of Softwarm Fever Fiber Knitted Fabrics <i>Jie Lu, Jia-Guang Meng, Xian Liu</i>	342
52	Study on Bleaching of Outlast Air-conditioning Fiber Knitted Fabrics <i>Zhen Wu, Jia-Guang Meng, Shao-Fang Chen</i>	349
53	The Development of Germanium Functional Knitted Fabrics <i>Di Wang, Yan-Jun Liu</i>	353
54	Surface Modification of the Polyacrylonitrile Membrane by NH ₃ Plasma Treatment <i>Ru Li, Ji-Fei Deng, Fen-Fen Liu, Huan Wang, Li Fang</i>	359
55	The Effects of Different Bio-enzymatic Pre-treatments on the Degumming Process for Rice Straw <i>Pei-Guang Li, Wei-Guo Sun, Zhao-Hui Hua</i>	363
56	Influence of Calendering on Ultra-thin Wool Fabric <i>Xiao-Shan Tian, Run-Jun Sun</i>	369
57	Study on the Preparation of Polyaniline and Polyaniline/Polyester Conductive Fabric <i>Tao Xue, Bao-Hong Zhang, Jia-Guang Meng</i>	374
58	Study on Damp-heat Setting Process for Curled Polyester Fiber <i>Liang Wei, Cheng-Kun Liu, Xiao-Ke Wang, Run-Jun Sun, Mei-Yu Chen</i>	380
59	Application of Specific Thermal Responses on Running Clothes Design <i>Jiao Jiao, Yi Li, Lei Yao, Jun-Yan Hu, Yue-Ping Guo, Shu Sun</i>	386

Track 4 Textile Sensory Bioengineering

60	Sensory Evaluation and Instrumental Methods for Measuring Tactile Properties of Silk Fabrics <i>Yan-Yan Wang, Wen-Yan Feng, Xiao Liao, Yi Li, Xue-Mei Ding</i>	391
61	Prediction Model of Coupled Heat and Moisture Transfer through Microclimate under Clothing by Grey Neural Network <i>Shan Cong, Lu-Lu Xie, Bao-Zhu Ke</i>	400

62	Effect of Compression Tights on Performance during Pedalling Exercise <i>Juan-Juan Cai, Yu-Ping Li, Guo-Dong Wang, A-Ming Lu, Xiao-Qun Dai</i>	407
63	Analysis on the Factors of Bra Comfortability <i>Qian Qi, Chi Liu, Xin Chen</i>	412
64	An Empirical Study on the Climate Effects of Fabric Touch Feels <i>Xiao Liao, Yi Li, Jun-Yan Hu, Yan-Yan Wang, Wen-Yan Feng, Xue-Mei Ding, Xin Zhang, Bo-An Ying, Quan-Hai Li, Xin-Xing Wu</i>	421
65	Elastic Recovery Performance Test on Knitted Fabric used in Cold-Proof Wool Trousers <i>Mei Wang, Jun Xu, Hong Xiao</i>	431
66	Subjective Contact Comfort Research on Na-no Far-infrared Knitted Fabric <i>Xiu-E Bai, Zheng Liu, Shuai Liu, Dong-Yan Wu</i>	438
67	Heat and Moisture Comfort Performance of Flame Retardant Fabrics <i>Jie Zhou, Xiao-Jie Huang</i>	446
68	The Consumer Behavior and Potential Market for Customized Shoes in Hong Kong <i>Xiao Ma, Yin-San Chau, Yi-Fan Zhang, Luximon Ameersing</i>	455
69	Assistance of Sales Language Strategy to Convey Brand Value in Underwear Selling <i>Qian Jiang, Wei Tian</i>	463
70	Study on Pressure and Movement Restriction of Stab-resistant Vests <i>Kyoung-Ok Kim, Ken Takei, Masayuki Takatera</i>	468
71	International Subjective Sensory Evaluation of Fabrics <i>Yan Wang, Jing Qi, Xin Zhang, Bo-An Ying, Fei Ma, Qian Zhang</i>	475
72	Comparative Study on 3D Evaluation and Self-evaluation of Jeans Fitting Satisfaction <i>Hai Yu, Hao Zhang, Wen Wu, Jing Guo</i>	485
73	Study on the Multiple Choice and Choice Sorting Appeared in Clothes Questionnaire Survey's Inputting Method in SPSS <i>Xin Zhang, Guan-Hua Ning, Jing Qi, Bo-An Ying, Wei-He Jia</i>	491
74	Aesthetic Evaluation of Clothing Color Combination: Behavioral and Electrophysiological Study <i>Luo-Rui Cai, Xiao-Feng Jiang</i>	497
75	Investigation of Thermal Comfort Properties of Black Fabrics for Abaya <i>Salwa Tashkandi, Stanley M. Fergusson, Li-Jing Wang, Sinnappoo Kanesalingam</i>	505

Track 5 Textile Thermal Bioengineering

76	Special Bodily Analysis based on Special Shape Female Riding-pants Comfort Pressure <i>Yao Jia, Jun Xu, Hong Xiao</i>	512
77	Thermal Strain of Firefighters during Training Simulating Live Fire, Maze Search and Tunnel/Chute <i>Chun-Man Cheng, Yi Li, Yue-Ping Guo, Jiao Jiao, Si-Hui Huang</i>	517

78	Experimental Study on Sulfur Dioxide (SO ₂) Adsorption by Wool Fiber Combined with Nano-titania (TiO ₂) Catalysis <i>Tian-Wei Qiang, Zhen-Qiang Yu, Yong-Hua Ren</i>	528
79	Effect of Quick-dry Sports Tights on Performance during Cycling in Warm Environment <i>Yu-Ping Li, Juan-Juan Cai, Xiao-Qun Dai</i>	535
80	Dynamic Pressure Analysis of Shoulder Straps on Sports Bras <i>Jie Zhou, Winnie Yu</i>	541
81	A Study on the Factors Impacting College Students' Cervical Vertebrae Health <i>Hui-Ping Zhou, Rong Zheng, Dong-Ping Shi, Hai-Jing Liu, Jian Li</i>	551
82	A Survey on Physiological Function and Psychological evaluation of Compression Garments <i>Zheng Cui, Li Liu, Yu-Fan Shi</i>	557
83	Evaluation of Effect of Aerogel on Thermal Protective Performance of Firefighter Clothing <i>Lu Jin, Kee-Jong Yoon, Yi Li</i>	565
84	Analysis and Comparison of Clothing Thermal Comfort Performance of the Existing Golf Wear <i>Yue-Ping Guo, Yi Li, Chun-Man Cheng, Nga-Sze Yeung</i>	571
85	A Study on the Effect of Dart Distribution on Shaping Effect of Bra <i>Xing-Yuan Duan, Xiu-Qin Hu</i>	581

Track 6 Textile Anthropological Bioengineering

86	Analysis on Bodily form of Young Females in Xinjiang <i>Ai-Min Xiao</i>	588
87	The Relationship between Lateral Tilt Angle and Neckline of Stand Collar <i>Ya-Ru Ding, Chi Liu, Shuang-Hu Wang</i>	592
88	A Method for Female Model Body Shape Evaluation and its Application <i>Rui-Liang Guo, Jiu-Liang Li</i>	600
89	Research and Analysis on Feature Parts of Human Body based on Surface Flattening in Three-dimensional Apparel Design <i>Fei Ma, Xin Zhang, Bo-An Ying</i>	606
90	Anthropometric Dimensions on Lower Body of Young Men in the Northwest China for Trousers Designing <i>Man-Yu Li, Jie Zhou, Xing-Yan Wei</i>	615
91	Lower Body Classification of Young Women <i>Yun-Chao Zhang, Rong Zheng, Wen Wu</i>	623
92	The Body Shape Analysis and Classification on Chinese Male Football Athletes <i>An-Hua Zhong, Wan Luo, Yu-Qin Hu, Yan-Yin Guo, Kai Zhang</i>	630
93	Research on the Methods of Fitting Jacket Back Neck Curve <i>Jing Chen, Xin Zhang, Bo-An Ying</i>	636

94	The Application of Reverse Designing Method in Extraction of Moulded Bra Cup's Feature Curves <i>Bo-An Ying, Juan Wang, Xin Zhang, Jing Qi, Xue Cui</i>	643
95	Data Analysis of Chest for Girls Bra Design <i>Jing Qi, Dong-Mei Xu</i>	651
96	A Research into Middle-aged Women's Figure in Northern Shaanxi <i>Yun Xiao, Hong Xiao</i>	656
97	Recovery and Reuse of Textile Waste <i>Ling-Li Wang, Li-Hua Chen</i>	661

Track 7 Textile Design and Bioengineering

98	Minority Vegetable Fibres – Natural, Commercial and Sustainable <i>Michael Hann</i>	671
99	Comparative Research on the Japanese Cultural Pattern and British Pattern <i>Xiao-Yan Ji, Tai-Sheng Gong, Li-Ying Zhou</i>	678
100	Analysis of Anatomical Physiology in the Cycling Pad Design <i>Jie Luo, Ai-Hua Mao, Yi Li, Joe S. Au, Xing Zhang, Liang-Jun Zhou, Xiao-Qi Yang</i>	685
101	The Relationship between Pants Structure and Motion Function in Outdoor Trekking <i>Hong-Li Ji, Wei Tian</i>	691
102	Design of Fashion Color based on Product Semasiology <i>Chen Wang, Jing-Wei Liu, Qing-Hua Zhang</i>	698
103	Study on Equestrian Sports and Improvement of Equestrian Clothing <i>Xiao-Hong Tian, Yu-Jing Zhang, Jia-Mian Wang, Shao-Yi Feng</i>	704
104	Study on the Symbolic Colors in Contemporary Design based on the Chinese Traditional Metaphysical Theory of Five Elements <i>Pang Yong, Wan Xiao</i>	709
105	Study on Banana Fiber and Application in Clothing <i>Peng-Peng Lv, Xiao-Wen Jiang</i>	714
106	Application of Fractal Geometry in Dress Design <i>Guang-De Li, Guan-Lin Zhu, Yuan-Ping Huang, Shan Sun, Wen-Wen Xie, Guan-Zhong Ding</i>	721
107	Research on the Application of Color Splice in Sweater Design <i>Ling Shan, Li-Li Mao, Xiao-Yan Li</i>	726
108	Use of Elements of Tang Dynasty in Haute Couture <i>Dan Liu, Hong Dai, Zhao-Xi Chen</i>	734
109	Comparison of Traditional and Modern Cheongsam <i>Ming Zhao, Yue Hong</i>	741
110	Research on Metallurgical Protective Clothing <i>Zhao-Xi Chen, Hong Dai, Dan Liu</i>	749
111	Innovative Features of Digital Printing in Fashion Design <i>Zong-Wen Huang</i>	754

112	Study on Bohemian Style Sweater Color Design <i>Zhi-Peng Li, Li-Li Mao</i>	760
113	Research on Functional Clothing for the Elderly <i>Geng-Sheng Chen, Huang Chen</i>	771
114	Deconstructing Modeling Design Characteristics of the Sweater Style <i>Yan Lian, Li-Li Mao, Zhi-Peng Li</i>	776
115	Exploring Functional Design Optimization for Firefighters' Uniform <i>Shu Sun, Yi Li, Yue-Ping Guo, Xiao Han, Ru Lv, Si-Hui Huang, Chun-Man Cheng, Jiao Jiao</i>	785
116	Research and Practice about Creative Draping Method <i>Pei-Na Qiu, Juan Liu, Li Liu</i>	796
117	Research on Innovation of Sweater Organizational Design <i>Zhi-Peng Li, Li-Li Mao</i>	803
118	Analysis of Jewellery Works through Longinus View <i>Xiao-Yan Zhang</i>	812
119	Research on Woolen Knitted and Braided Wall Hanging Fabrics Applied in Home Textiles <i>Miao Shang, Li-Li Mao</i>	815
120	The Application of Colors in Fashionable Women's Dress Display Design <i>Yi-Fei Qu</i>	822
121	The Influence of Fabric Properties on the Ease between Body and Garment <i>Dan-Qi Cheng, Jian Li, Bing Liu</i>	829
122	The Research of Preschoolers' Sweater Pattern Design <i>Jun Lin, Li-Li Mao, Xiao-Yan Li</i>	836
123	The Analysis of Raglan Sleeve Style on Women's Clothing and Query Applications <i>Zhong-Le Wang, Bao-Hua Tian, Jing-Yan Li</i>	844
124	Structure Optimization of Infants' Wear based on Physical Characteristics and Sustainability <i>Meng-Ping Chen, Xiao-Wen Jiang, Ceng-Huang</i>	854
125	A Biomechanical Model of the Female Upper Body for Bra Design <i>Ying-Lei Lin, Yi Li, Yue-Ping Guo, Ming Zhang</i>	860
126	Exploration and Research on the Establishment of a Clothing Display Management System <i>Zhong-Le Wang, Bao-Hua Tian, Jing-Yan Li</i>	865
127	Progress of Learner Performance through Integrating Virtual World with Computer Simulation on Clothing Functional Design <i>Ming-Liang Cao, Josephine Csete, Yi Li, Zhi-Geng Pan</i>	871
128	Research on Web Interface Design in Fashion Design Digital Network Platform <i>Xin Gong</i>	865
129	Research on Pillow's Embroidered Pattern Culture in Southern Shaanxi <i>Yang-Zi Mei, Yun Ma</i>	890
130	Research on Humanization of Furniture Design in Product Design <i>Yun Ma, Bin Zhu, Wei-Feng Li</i>	897

131	Research on Clothing in Han Dynasty Stone Relief of Music and Dancing Acrobatics <i>Yun Ma, Wei-Feng Li, Bin Zhu, Qian Wang</i>	902
132	Approximation of the Sleeve Cap Line with Cubic Bezier Curves <i>Ze-Hong Jiang, Bo-An Ying, Xiao-Ying Dong, Bao-Feng Xu</i>	908
133	Dilettante Amateurism in Streetwear Design <i>Yu-Li Bai, Ying-Chun Zang</i>	915
134	A Buying Behavior Survey on Sports Trousers of Young Men in Northwest China <i>Man-Yu Li, Jie Zhou, Xing-Yan Wei</i>	921
135	Research on Methods of Fabric Material Recreation Applied in Sweater Design <i>Li-Li Mao, Yan Lian, Zhao Lv</i>	929
136	Pattern and Sewing for Promoting FSD Uniform Shirt Design <i>Xiao Han, Yi Li, Yue-Ping Guo, Shu Sun, Si-Hui Huang, Chun-Man Cheng</i>	936
137	Applied Research on Golden Section in Garment Design <i>Jie Zhou, Bo-Nan Tian</i>	946
138	Study on Characteristics of Fastening Materials used in Outdoor Trekking Pants <i>Hong-Li Ji, Wei Tian, Xiao-Lan Li</i>	955
139	Study on Form Characteristics of the Sweater Pattern <i>Yan Lian, Li-Li Mao, Zhi-Peng Li</i>	960
140	Study about Honeysuckle Pattern on Textiles in Wei, Jin and Northern and Southern Dynasties of China <i>Rui Liu, Zhao-Hua Liang</i>	966
141	Aesthetic Characteristics of the Baoxiang Flower Pattern in Textiles of the Tang Dynasty in China <i>Tian Zhai, Zhao-Hua Liang</i>	972
142	Technical Specifications of Functional Design for Firefighter Uniforms <i>Ru Lv, Yi Li, Yue-Ping Guo, Chun-Man Chen, Si-Hui Huang, Jiao Jiao</i>	977
143	Study on Color Design of Object-patterns in Sweaters <i>Li-Li Mao, Yan Lian, Zhao Lv</i>	988
144	Research on Reversal Design of the Stand Collar Pattern based on 3D Modeling Approach <i>Wei Liu, Ming-Hai Cui</i>	994

Track 8 Evaluation and Testing Methods

145	Effect of Fabric Softener on Bending Properties of Cotton Yarn <i>Kyoung-Ok Kim, Yui Uchikawa, Masayuki Takatera</i>	1001
146	Development of a Rapid Method for Raw Silk Sericin Content Determination <i>Yan-Xia Han, Yi Li, Jun-Yan Hu, Xin-Xing Wu, Quan-Hai Li, Qing Ye</i>	1010
147	Study on the Moisture Comfort Property of Natural Fiber Fabrics <i>Ceng Huang, Xiao-Wen Jiang, Meng-Ping Chen</i>	1016
148	Particle Swarm Optimization based Method for Fabric Evaluation <i>A-Sai Bao, Quan Gu, Cai-Hong Hou</i>	1025

149	Determination of Perfluorinated Compounds in Textiles using Ionic Liquid Aqueous Solution Coupled with Gas Chromatography/Mass Spectrometry <i>Wei Chang, Hong-Ping Gao, Run-Jun Sun</i>	1031
150	The Analysis on Simulating Prolonged Wear <i>Shuang-Hu Wang, Chi Liu, Ya-Ru Ding</i>	1036
151	Computer Intensive Evaluation of Fabric Total Appearance <i>Rajesh Mishra, Jiří Militký, Dana Kremenakova</i>	1041
152	Research on Warmth Retention of Goose Down <i>Yan-Li Ma, Qian Liu</i>	1049
153	Study of the Surface Performance of Super-fine Wool of Different Fineness <i>Qiu-Shi Wang, Run-Jun Sun, Cheng-Kun Liu, Yuan He</i>	1055
154	A New Method to Characterize Dynamic Heat Conductivity Properties of Fabric under Various Pressure Conditions <i>Quan-Hai Li, Yi Li, Jun-Yan Hu, Xiao Liao, Xin-Xing Wu</i>	1060
155	A Study on the Style of Recycled Polyester/Wool Blended Fabric <i>Hui Qiao, Jian-Zhong Yang, Fang-Chao Zhang</i>	1073
156	Application of Mathematical Morphology in the Defects Image Processing of Knitted Fabric <i>Shu Zhao, Qi-Chi Yu</i>	1077
157	A New Test Method for Heat Conductivity of Filling Fiber Assembly <i>Qian Liu, Yan-Li Ma</i>	1084
158	Research on Fluffing Characteristic of Variable Cashmere Sweaters Surface <i>Liu Yang, Jian-Zhong Yang, Long Li</i>	1090
159	Investigation on Shielding Efficiency of Fabric Embedded Stainless Steel Filament <i>Zhao-Huan Zhang, Jian-Yong Yu, Ming Zhang, Qing Shi</i>	1098
160	Research on Wrinkle Recovery Performance of Cotton Fabric in Dry and Wet Conditions <i>Zhi-Quan Xu, Kan Lai, Liu-Qing Liu, Run-Jun Sun, Jie Dong</i>	1104
161	Analysis on the Heat Transfer Performance of Single-side Napped Fabric <i>Su-Jian Zhang, Yi Li, Jun-Yan Hu, Xiao Liao, Xu-Qing Liu, Hai-Quan Li, Xin-Xing Wu</i>	1111
162	The Wearability Test and Comprehensive Evaluation of Magnetic Fiber Knitted Fabrics <i>Jing Zhang, Jia-Guang Meng, Xue-Ni Gao</i>	1119
163	Effect of Weaving Density on Liquid Flow through Woven Fabrics <i>Chun-Hong Zhu, Masayuki Takatera</i>	1125
164	A Novel Sweating Cylinder for Dynamic Thermal-wet Comfort Measurements of Fabrics <i>Bao-Zhu Ke, Xin Guo, Yan Sun</i>	1134
165	Hand Evaluation of High Counts and High Density Fabrics <i>Chao Zhang, Qing Liao, Li Liu, Ya-Luan Qin, Xiao-Ning Wang</i>	1141
166	A Comparative Study of Fabric Stiffness based on FTT, KES and Subjective Testing <i>Xin-Xing Wu, Yi Li, Jun-Yan Hu, Xiao Liao, Quan-Hai Li</i>	1147

167	Finite Element Simulation of Flexible Low Density Polymer Foam During Moulding Process <i>Long Wu, Kit-Lun Yick, Sun-Pui Ng, Joanne Yip</i>	1155
Track 9 Computer Modeling and Simulation		
168	Study on Mapping Relationship between Spread Garment and Production Sketch <i>Jin-Song Du, Zi-Tian Yang, Hai-Yang He</i>	1163
169	Determination of Thickness and Type in Fabric Design: Steady-state Modeling and Numerical Algorithms <i>Peng Cui, Ding-Hua Xu</i>	1170
170	A 3D Heat and Moisture Transfer Model for Clothed Human Body <i>Feng-Zhi Li, Yi Li, Yang Wang</i>	1181
171	Numerical Analysis for Thermal Performance of Bladder Anti-G Garment <i>Yang Wang, Feng-Zhi Li, Yi Li</i>	1189
172	The Electroosmotic Flow of Power-law Fluid in Porous Polymer Membrane <i>Shu-Yan Deng, Jun-Jun Sun, Qing-Yong Zhu</i>	1196
173	A 3D Digital Geometric Modeling Method of the Human Body for FEA <i>Jing Qi, Lu Lu, Xin Zhang</i>	1207
174	Data-driven Geometrical Measurement and Analysis for Realistic Garment Materials <i>Li Liu, Ruo-Mei Wang, Shan Zeng</i>	1217
175	The Study of Biomechanical Models on the Sports Bra Strap <i>Jie Zhou, Winnie Yu</i>	1224
Track 10 Textile Bioinformatical Engineering		
176	Study on the Construction Method of Bra Product Knowledge Model based on Ontology <i>Xin Zhang, Bei Cao, Bo-An Ying</i>	1233
177	Research on Consumers Demand for Apparel and Clothing Satisfaction of Aged Women in Yulin <i>Wei-Na Bai, Hong Xiao</i>	1244
178	The study on the Impact of the Clothing Brand Name Language to Communication based on the IMC Theory <i>Xin Chen, Chi Liu, Qian Qi</i>	1252
179	Study on the Relationship between B2C Apparel Website Attribute and Consumer's Buying Intention <i>Su-Wei Sun, Jian-Fang Liang</i>	1261
180	The Application Research of PDM System in Garment Enterprises <i>Yan-Wen Zuo, Xiao-Wen Jiang, Peng-Peng Lv, Meng-Ping Chen</i>	1269
181	Research on the Influence of Clothing Brand's Nomenclature on Consumers <i>Su-Wei Sun, Jian-Fang Liang</i>	1274

182	Research on Body Build of the Elderly Women in Northern Shaanxi Region <i>Yun Xiao, Hong Xiao</i>	1282
183	The Analysis of Clothing Preference of College Students <i>Ya-Ru Ding, Chi Liu, Shuang-Hu Wang</i>	1286
184	Investigation on Storage and Treatment of Female Wasted Brassiere <i>Shuang-Hu Wang, Chi Liu, Ya-Ru Ding</i>	1292
185	Analysis on the Effectiveness of Customer Service Surveys in Clothing Stores <i>Xuan Liu, Chi Liu, Yu-Di Sun</i>	1297
186	Research on Apparel Fabrics and Shop Displays <i>Hao Xin, Wei Tian</i>	1303
187	The Design of Data Collaborative Management System for Apparel Manufacturing <i>Bai-Li Xue, Jian-Ming Chen, Xue-Xia Li, Qi Li</i>	1307
188	Research on Garment Products Launch Strategy <i>Xiao-Hong Liu</i>	1312
189	Clothing Consumption Psychology Analysis based on the Popular Language of “80”s <i>Xiao-Qiong Wu</i>	1319
190	Research on Young Male's Foot Types Classification <i>Li-Na Cui, Xin Zhang</i>	1325
191	Setting up a Digital Named Standard for Chinese Traditional Costume Colors through Color Card <i>Ru Zhang, Jing-Jing Liang</i>	1331
192	Research on Internal Control Information Disclosure in the Listed Textile Company <i>Li-Li Zhang, Ying Tong</i>	1338
193	Research on Influence of Clothing Brand’s Nomenclature on Consumers <i>Su-Wei Sun, Jian-Fang Liang</i>	1345
194	A Study on the Method of Knowledge Classification and Expression of Uniform Design based on Case Reasoning <i>Mei-Mei Zhao, Bo-An Ying, Xin Zhang, Ying-Ying Zou, Ze-Hong Jiang</i>	1353
195	Research on Functional Elements Design and Adaptive Method of User Interface for Sportswear Knowledge Map System <i>Ying-Ying Zou, Bo-An Ying, Xin Zhang, Zhi-Ya Zhang, Mei-Mei Zhao</i>	1360
196	Research on Classification of Scientific and Technological Knowledge of Sportswear <i>Zhi-Ya Zhou, Long Wu, Bo-An Ying, Xin Zhang, Ying-Ying Zou</i>	1367
197	Construction of the Database of Costumes Key-animator in Animation <i>Jun-Mei Zeng, Jing Wang</i>	1374
198	Analysis on Comfort Requirements and Functional Development of Sportswear Materials <i>Can-Yi Huang, Xin Zhang</i>	1381
199	Research on Knowledge Warehouse based on Garment Knowledge Management <i>Xiao-Feng Wang, Bo-An Ying, Xin Zhang, Xue-Ying Song</i>	1386
200	Marketing Strategy of Original Garment Brand in Online Retail Stores <i>Jia Zheng, Dong Ma</i>	1394

Track 11 Textile Sustainability

201	Challenges and Opportunities for Creation of Green Fibres and Textiles for our Future <i>Ian R. Hardin</i>	1400
202	Development of Technology Roadmap for Guangdong Biomedical Textile Industry <i>Si-Nuo Li, Yi Li, Mai-Wang Li, Ze Li, Jun-Yan Hu, Yue-Ping Guo, Jia-Shen Li, Gang Li, Ming-Liang Cao</i>	1407
203	Research on Water Extraction of Cortex Fraxini for Dyeing of Wool Fabrics <i>Wen-Zhao Shi, Jian-Wei Xing, Jin-Shu Liu</i>	1420
204	Research on Application of Carbon Label Certification on Bra <i>Bao-Feng Xu, Bo-An Ying, Xiao-Ying Dong, Jing Qi, Zhuang-Li Deng</i>	1427
205	Application Research of Carbon Footprint Assessment on the Molded Bra Product in the Production Process <i>Bo-An Ying, Zhuan-Li Deng, Xin Zhang</i>	1436
206	CO ₂ Emissions during Domestic Washing Phase of Clothes based on Consumer Lifestyle Approach <i>Rui Huang, Jie Pei, Xiong-Ying Wu, Xue-Mei Ding</i>	1443
207	The Influence of Electric Energy Consumption on Circular Weft-knitting Machine <i>Yin Zhang, Xin Li, Jian-Ming Yu, Xue-Mei Ding</i>	1453
208	Effect of Time, Temperature and Duty Cycle during Domestic Tumble Drying on Surface Performance of Woven Cotton-blended Shirts <i>Zhao-Jun Li, Jian-Rong Yuan, Ping Ye, Xue-Mei Ding</i>	1460
209	Research on the Relationship between the Irritation and Surface Characteristics of Grass Cloth <i>Yuan Wei, Yong-Mei Deng</i>	1468

Author Index

Acknowledgement to Reviewers