

13th Textile Bioengineering and Informatics Symposium Proceedings (TBIS 2020)

Combatting COVID-19 Pandemic with Science and Technology Innovations

Online
7 – 10 July 2020

Editors:

Yi Li
Meifang Zhu
Xianyi Zeng

ISBN: 978-1-7138-1855-7

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© (2020) by Textile Bioengineering and Informatics Society (TBIS)
All rights reserved.

Printed with permission by Curran Associates, Inc. (2021)

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 Roa
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 2020

TABLE OF CONTENT

Track 1 Technology Innovations for Combating Covid19 Pandemic

1	Contaminations and Protective Performances of Personal Protective Clothing in Atomized Droplets Contamination Simulation <i>Yue-Ping Guo, Yi Li</i>	1
2	COVID-19 Personal Protective Equipment Sterilization System <i>Uwe Reischl</i>	10
3	Research on Standard Analysis and Test Performance of Protective Masks <i>Hai-Tao Wang, Xing-Xing Pan, Gui Liu, Zhao-Qun Du, Jin-Kang Liu, Feng Chen, Ming-Xing Wang</i>	15
4	Eradicating Spread of Virus by Photo-Catalysis Process <i>Aamir Mahmood, Jiri Militky, Miroslava Pechočiaková, Jakub Wiener</i>	22
5	Copper Based Viral Inhibition <i>Azam Ali, Jiri Militky, Muhammad Shahid</i>	32
6	A Review on Advanced Smart Material Based Nano Sensors for Viral Detections <i>Muhammad Umar, Hafiza Hifza Nawaz, Iqra Nawaz, Yi Li</i>	37
7	Virology of SARS-CoV-2 <i>Dan Wang, Shi Hu, Dana Kremenakova, Jiri Militky, Mohanapriya Venkataraman, Yuan-Feng Wang, Kai Yang, Qing-Yan Peng, Xiao-Dong Tan</i>	49
8	Eradicating Spread of Virus by using Activated Carbon <i>Daniel Karthik, Jiri Militky, Mohanapriya Venkataraman</i>	56
9	Study and Practice on Hand-made Production Technology of Single-use Medical Face Mask <i>Mei Qu, Chuan-Yu Zhou, Jie Zhou</i>	64
10	Kinetic Model for Disinfection with Photo-Oxidation <i>Qing-Yan Peng, Mohanapriya Venkataraman, Kai Yang, Jiri Militky</i>	68
11	Characterization, Indication and Passivation of SARS-CoV-2 <i>Sajid Faheem, Jiri Militky, Jakub Wiener</i>	76
12	Copper Coated Textiles for Inhibition of Virus Spread <i>Shi Hu, Dan Wang, Kai Yang, Yuan-Feng Wang, Tao Yang, Qing-Yan Peng, Xiao-Dong Tan, Dana Kremenakova, Jiri Militky, Mohanapriya Venkataraman, Aravin Prince Periyasamy</i>	84
13	Analysis of the Current Status and Development Trend of Medical Protective Clothing Standards <i>Jun Zhang, Xing-Xing Pan, Gui Liu, Zhao-Qun Du, Jin-Kang Liu, Feng Chen, Ming-Xing Wang</i>	92

Track 2 Smart E-textile Wearables

14	Electrical Heating Properties of Various Carbonized Textile Structures <i>Yuan-Feng Wang, Vijay Baheti, Kai Yang, Shi Hu, Dan Wang, Xiao-Dong Tan, Tao Yang, Jiri Militky</i>	99
15	Embroidery Parameters to Produce Conductive Tracks with Enhanced Conductivity <i>Yan Zheng, Lu Jin, Ze-Kun Liu, Jing Qi, Yi Li</i>	107
16	Research on Intelligent Wearable Product Design Based On 4D Printing Technology <i>Wen Zhang</i>	114

17	Improved Electric Heating Clothing to Relieve Stiffness of Shoulder and Neck Muscles: A Design Concept <i>Jin-Gui Yu, Cheng Wei</i>	122
18	Spontaneous-heating, Antibacterial and Smart Cotton Fabric Modified with Carbon Nanotubes <i>Li-Feng Zhang, Gui-Cui Chen, Ling Liu</i>	130
19	Effect of Different Parameters of Fabric Embroidered Circuit on Electrical Conductivity <i>Bondok Noha, Hashima Wael, El Gholmy Sherwet, El Geiheini Adel</i>	136

Track 3 Textile Biomedical Engineering

20	Cotton Fabrics with Keratin/TiO ₂ Finishing for Durable UV Resistance <i>Ting Liu, Jin-Min Meng, Qasim Zia, Hugh Gong, Jia-Shen Li</i>	145
21	Dendrimer-Grafted PLGA Nanofibrous Matrix-Mediated Gene Delivery Systems <i>Qing-Yan Peng, Shi-Li Xiao, Xiao-Dong Tan, Kai Yang, Yuan-Feng Wang, Tao Yang, Dan Wang, Shi Hu, Xiao-Man Xiong, Mohanapriya Venkataraman, Jiri Militky</i>	152
22	Influence of UV Light and Ozonization on Microbes <i>Xiao-Dong Tan, Qing-Yan Peng, Kai Yang, Jana Saskova, Aravin Prince Periyasamy, Jiri Militky, Jakub Wiener</i>	159
23	Establishment of the Finite Element Model of Human Body Wearing Sports Bra <i>Chang-Lin Zhu, Wu Long, Bo-An Ying, Jing Qi</i>	167
24	Disinfection Mechanisms of UV Light and Ozonization <i>Yuan-Feng Wang, Jiri Militky, Aravin Prince Periyasamy, Mohanapriya Venkataraman, Vijay Baheti, Kai Yang, Shi Hu, Dan Wang, Xiao-Dong Tan, Tao Yang, Qing-Yan Peng</i>	173
25	Dynamic Modelling of Sports Bra Design for Middle Aged Women <i>Lin Mu, Li-Jing Wang</i>	181
26	Enhanced Disinfection of Titanium Dioxide <i>Muhammad Zaman Khan, Jiri Militky, Jakub Wiener</i>	188
27	Design of Accessible Trousers for Wheelchair Users <i>Jin-Hui Ren, Qi Wang, Li-Min Shi, Jing Guo, Hai-Qiao Huang</i>	197
28	Electrospun Porous-Structure Fibers: The Formation Mechanism, Process, Applications and Challenges <i>Yuan-Sheng Zheng, Xiao-Qi Mu, Xue-Qin Li, Bin-Jie Xin</i>	208

Track 4 Clothing Bioengineering

29	Application of the Directed Graph Method in the Knowledge Analysis of Clothing Pattern Design <i>Chao-Jun He, Bo-An Ying, Xiao-Feng Wang, Jing Qi</i>	215
30	An Anthropometric Research on Universal Fashion Design for Wheelchair Users' Tops <i>Jing Guo, Qi Wang, Li-Min Shi, Jin-Hui Ren</i>	224
31	Effect of Linings on Ease of Body Movement in Jackets <i>Yosuke Horiba, Haruka Uehara, Shigeru Inui</i>	232
32	Sewing Time Optimization Based on Predetermined Time System Method <i>Ya-Li Zhang, Pei-Li Xun, Jin-Song Du, Ya-Yun Yu</i>	239
33	Effect of Ease on Thermal Insulation of Men's Pyjamas with a Knitted Fabric Made of New Cotton Non-Twisted Hollow Yarn <i>Toko Manabe, KyoungOk Kim, Masayuki Takatera, Kyosuke Kanda, Masatoshi Kawakami, Nagisa Hirata</i>	246

34	Optimization based Garment Transfer for Virtual Try-on <i>Hao-Yang Xie, Yue-Qi Zhong, Zhi-Cai Yu</i>	251
35	Barrier-free Design of Shoes for Lower Limb Disabled <i>Piao-Piao Liu, Hai-Qiao Huang</i>	259
36	Optimization of Apparel Size Selection For Mass Customization Using Data Mining-Based Knowledge Discovery Technique <i>Zhu-Jun Wang, Xian-Yi Zeng, Jian-Ping Wang, Pascal Bruniaux, Ying-Mei Xing, Cheng Chi, Meng-Yun Zhang</i>	269
37	Investigation and Design on the Leg Warmer for the Lower Limb Disabled <i>Chi-Yu Xiong, Jin-Hui Ren, Yan-Jun Wang, Li-Min Shi, Qi Wang, Jing Guo, Hai-Qiao Huang, Qing-Qing Zhou</i>	278
38	Classification of Middle-aged Females' Body Shape Based on Three- Dimensional Data <i>Ya-Li Ling, An-Hua Zhong</i>	288
39	Research on the Evolutionment of Fashion Cheongsam in the Republic of China <i>Zhao-Qing Li</i>	295
40	Application of Optical Illusion Patterns on Modern Knitwear Design <i>Shi-Yu Liu, Guo-Xiang Yuan</i>	302
41	Construction and Application of Jacket Knowledge Framework Based on Domain Ontology <i>Xiao-Yu Jiang, Bo-An Ying, Xiao-Feng Wang, Jing Qi</i>	310
42	Emotional Expression of Intelligent Jewelry Design <i>Shu-Qi Wang</i>	320
43	Improving the Attire Shopping Experience via Mobile Augmented Reality <i>Chao Huang, Bo-An Ying, Jing Qi, Xiao-Feng Wang</i>	326
44	Tang Spherical Censer's Localization in Japan and Its Influence on Japanese Arts and Literature <i>Chen-Xi Li, Rong Zheng, Yuan-Feng Liu</i>	333
45	The Influence of Western Culture on Republic of China Vest <i>Wan-Yi Jiang, Zhao-Qing Li, Bao-Fa Liu</i>	343
46	Study on the Elements of "Xi Lan Ka Pu" Pattern Design Taking the Color Application Characteristics as an Example <i>Zhao Li, Sone Simatrang, Veerawat Sirivesmas, Jirawat Vongphantuset</i>	350
47	Design and Application of Wool Felt Craft in New Chinese Style Fashion <i>Ye Chen, Zhao-Qing Li</i>	358
48	Role of Sustainable Design, Materials and Manufacturing in the Fashion Industry <i>Yan-Shan Xie, Mei-Qun Na, Jun-Yi Xu, Guo-Xiang Yuan</i>	364
49	Relationship between Hand of Dress Shirt Fabrics and Price Evaluation by Experts <i>KyoungOk Kim, Ryo Wakao, Masayuki Takatera, Yuji Kitazawa</i>	371

Track 5 Textile Supply Chain Informatics

50	Two-Stage Ant Colony Optimization for Operation Task Assignment to Balance Garment Hanging Production Line <i>Zi-Ang Xie, Jin-Song Du, Qing-Ting Chen, Shu-Jie Ding</i>	375
51	Evaluation of Brand Value of A-share Garment and Home Textile Listed Companies in 2019——Based on HIROSE-CNGarments Model <i>Chang-Lan Zhou</i>	384
52	On the Sources of Brand Value of Textile Enterprises—— Multiple Case Analysis in the Fight against COVID-19 <i>Chang-Lan Zhou</i>	390
53	Research on Blended Learning Mode for Fashion English Based on "Rain Classroom" <i>Kai Ma</i>	396

54	Research on the Influence of Relationship Quality of Clothing Brands on Consumers' Behavioral Intention <i>Qiu-Yue Wang, Xia-Fen Wu</i>	402
55	An Exploratory Study of Chinese Textile and Apparel Firm Managers' Perceived Cost of New Technology <i>Bao-Lu Wang, Jung Ha-Brookshire</i>	412
56	Research on Evaluation of Investment Environment for Chinese Textile and Garment Enterprises <i>Si-Bei Lu, Lin Ma</i>	421
57	Comparative study on Export Competitiveness of Textile and Garment Trade between China and Turkey <i>Fu-Juan Deng, Shu-Li Hao</i>	429
58	Creative Expression of Natural Materials in Fiber Art <i>Lian Liu, Xin-Yan Lu</i>	436
59	Business Model Innovation of Apparel Brands from the Perspective of Community Economy <i>Shan Wang, Gang Fang</i>	442
60	Analysis of Industry Relevance and Industry Spillover Effect of Textile and Garment Industry in Jiangsu Province <i>Peng-Fei Shao, Lei Yao</i>	449
61	Empirical Study of the Development Potential of the Textile and Garment Industry in Zhejiang Province <i>Peng-Fei Shao, Lei Yao, Xue-Ling La</i>	456
62	The Transfer of Chinese Textile Industry under the Background of "Belt and Road" <i>Hong Xin, Lei Yao</i>	463
63	The Latest Progress of the Research and Exhibition on the Digitization of Nanjing Yun Brocade Colors <i>Ru Zhang, Qi Liu</i>	469

Track 6 Textile Science and Engineering

64	Evaluating the Similarity Between Three-Dimensional Fabric Drape Models <i>Zhi-Cai Yu, Yue-Qi Zhong, Hao-Yang Xie</i>	476
65	Numerical Simulation of Heat Transfer Through Carbon Fabrics under Convective Heat <i>Zhen-Rong Zheng, Jia-Wei Wang, Chen-Chen Han, Xiao-Ming Zhao</i>	485
66	A Novel Model of Heat and Moisture Transfer in Human-Chemical Protective Clothing-Environment <i>Zhan-Keng Zhang, Feng-Zhi Li, Xiao-Qun Dai, Hong-Qin Dai</i>	492
67	Fabrication of Polyurethane/Polyurethane Yarn Composite Film with Enhanced Mechanical Property <i>Jia-Jing Zhang, Huan Zhang, Liang-Jun Xia, Wei-Lin Xu, Chun-Hua Zhang</i>	500
68	Effect of Heat on Discoloration Fatigue of Thermochromic Fiber Fabric <i>Dan Liu, Li-Hua Chen, Chang-Huan Zhang</i>	507
69	Effect of the Warp Direction of Fabric on Pleats Modeling <i>Wen-Ting Yan, Jian Li</i>	513
70	Estimation of Yarn's Coefficient of Mass Variation Utilizing Artificial Intelligence Techniques <i>Adel El-Geiheini, Sherien ElKateb, Manal R. Abdel-hamied</i>	521
71	Analysis of Thermal Insulation Properties of Wadding Macrostructure <i>Xin Chen, Yue-Ping Wang</i>	529
72	Factors Influencing the Moisture Absorption Characteristics of Cotton Terry Fabrics <i>Nashwa Agamia, Wael Hashima, Sherwet EL-Gholmy, Adel Elgeiheini</i>	535

73	Digital Image Correlation Method for Determining the Poisson's Ratio of Knitted Fabrics <i>Ke Yang, Zhao-Hui Wang</i>	540
74	Study on the Structure and Knitting Technology of Traditional Gensey Sweater <i>Li Wang</i>	548
75	The Effect of Electrode Materials and Ultrasound on Electrochemical Reduction <i>Xiao-Dong Tan, Qing-Yan Peng, Kai Yang, Yuan-Feng Wang, Tao Yang, Dan Wang, Shi Hu, Xiao-Man Xiong, Jana Saskova, Jakub Wiener, Mohanapriya Venkataraman, Jiri Militky</i>	554
	Acknowledgement to Reviewers.....	561