Preface

This proceedings contains the papers presented at The 13th International Wool Research Conference (IWRC-13) and AATCC Sustainability Symposium (AATCC-SS) hosted by Zhejiang Sci-Tech University on June 10-14, 2015, in Hangzhou, China. The theme of IWRC-13 is "Innovation, Ecology, and Quality: The Pathway to the Future of Wool", and the theme of AATCC-SS is "Innovation, Sustainability, and Quality: The Pathway to the Future". The conference has fulfilled the expectations of providing the preeminent forum for presenting latest research findings, exchanging innovative ideas, and discussing new technologies in the field of wool dyeing and finishing, textile chemistry and materials. Being organized by Zhejiang Sci-Tech University, and held in Hangzhou, the conference is of special significance for the university, the oldest school with a textile education history of over 110 years in China, and for the city, Hangzhou, the epicenter of Chinese modern textile industry. It offered the participants great opportunities to feel the pulse of textile research and development, manufacturing, and education in China and around the world.

Thanks to the great efforts of the IWRC-13 and AATCC-SS committees, and the dedication of participants, the conference featured approximately 70 papers covering following topics:

- Processing Technologies and Properties of Wool
- Dyeing in Textile Industry
- Functional Finishing of Textile
- Smart and Functional Textile Materials
- Biotechnologies in Textile Production
- Measurements, Detections and Analysis in Textile Production
- Treatment and Degradation of Wastes in Textile Industry
- Product Design and Industrial Engineering in Textile Industry

We are grateful to the conference committee members, the sponsors, the session chairs, our colleagues, and all volunteers for their devotion and hard work that have made this conference and proceedings possible and successful. Finally, we would like to thank the participants for sharing their work.

Jianzhong Shao

Executive chairperson of IWRC-13

July 15, 2015

Committees

The 13th International Wool Research Conference (IWRC-13)

Hosted by

ZHEJIANG SCI-TECH UNIVERSITY (ZSTU)

Organized by

- Engineering Research Center for Eco-Dyeing & Finishing of Textiles, Ministry of Education, China
- Key Laboratory of Advanced Textile Materials & Manufacturing Technology, Ministry of Education, China
- National Base of International Science and Technology Cooperation in Textiles and Consumer-Goods Chemistry, China
- Zhejiang Provincial Top Key Academic Discipline of Chemical Engineering and Technology, Zhejiang Sci-Tech University, China
- Zhejiang Provincial Engineering Research Center for Clothing Technology, China
- Zhejiang Provincial Textile Engineering Society, China

Conference chairman

Songliang QIU, Zhejiang Sci-Tech University, China

Science & Technology Committee

Chairman: Mu YAO, Xi'an Polytechnic University, China

Members (in alphabetical order):

Jianyong CHEN, Zhejiang Sci-Tech University, CHN

Yan CHEN, Soochow University, CHN

Cailing DING, Shandong Ruyi Group, CHN

Xuerong FAN, Jiangnan University, CHN

Yiping QIU, Donghua University, CHN

Jianzhong SHAO, Zhejiang Sci-Tech University, CHN

Runjun SUN, Xi'an Polytechnic University, CHN

Xiongying WU, Shanghai Entry-Exit Inspection & Quarantine Bureau, CHN

Jianwei XING, Xi'an Polytechnic University, CHN

Kelu YAN, Donghua University, CHN

Jinbo YAO, Wuhan Textile University, CHN

Jianfei ZHANG, Tianjin Polytechnic University, CHN

Feng ZHAO, China National Silk Museum, CHN

Chris M CARR, The University of Leeds, UK

Jolon DYER, AgResearch Ltd., NZL

Qinguo FAN, University of Massachusetts Dartmouth, USA

Peter E INGHAM, AgResearch Ltd, NZL

Girish KHERDEKAR, Wool Research Association, IND

Keith R MILLINGTON, CSIRO, AUS

Jinsong SHEN, De Montfort University, UK

Xungai WANG, Deakin University, AUS

John H XIN, Hong Kong Polytechnic University, HKG

Hidekazu YASUNAGA, Kyoto Institute of Technology, JPN

Organizing committee

Chairman: Wenhua CHEN, Zhejiang Sci-Tech University, China

Executive chairman: Jianzhong SHAO, Zhejiang Sci-Tech University, China

Members (in alphabetical order):

Weiguo CHEN, Jiping WANG, Xiaojun WANG, Minghua WU, Dinghua XU, Juming YAO,

Qi ZHANG, Jinhuan ZHENG, Lan ZHOU, Chengyan ZHU, Fengyuan ZOU

Conference secretariat

Secretary-general: Minghua WU

Deputy Secretary-general: Lan ZHOU, and Qi ZHONG

Secretary:

Guoqiang CAI, Ying CAI, Zhihai CAO, Liqin CHAI, Tao CHEN, Zhihua CUI, Yi HU, Ye LI, Yongqiang LI, Junxiong LIN, Dongming QI, Lili WANG, Jindan WU, Lei YANG, Lingmin YI, Lei ZHU

AATCC Sustainability Symposium (AATCC-SS)

Hosted by

Zhejiang Sci-Tech University (ZSTU)

American Association of Textile Chemists and Colorists (AATCC)

Organized by

- Key Laboratory of Advanced Textile Materials & Manufacturing Technology, Ministry of Education, China
- Engineering Research Center for Eco-Dyeing & Finishing of Textiles, Ministry of Education, China
- National Base of International Science and Technology Cooperation in Textiles and Consumer-Goods Chemistry, China
- Zhejiang Provincial Top Key Academic Discipline of Chemical Engineering and Technology, Zhejiang Sci-Tech University, China
- Zhejiang Provincial Key Laboratory of Fiber Materials and Manufacturing Technology,
 China

Conference chairman

Songliang QIU, Zhejiang Sci-Tech University, China

Science & technology committee

Chairman: Xiang ZHOU, Donghua University, China

Members (in alphabetical order):

Zaisheng CAI, Donghua University, CHN

Guoqiang CHEN, Soochow University, CHN

Wenxin CHEN, Zhejiang Sci-Tech University, CHN

Jianrong GAO, Zhejiang University of Technology, CHN

Xiaojun Peng, Dalian University of Technology, CHN

Qilong REN, Zhejiang University, CHN

Xuehong REN, Jiangnan University, CHN

Baihua WANG, Beijin Institute of Fashion Technology, CHN

Jiping WANG, Zhejiang Sci-Tech University, CHN

Wenping WU, Novozymes (China) Investment Co. Ltd., CHN

Zhong XIN, East China University of Science and Technology, CHN

Xueming YANG, Dalian Institute of Chemical Physics, Chinese Academy of Science, CHN

Yugao ZHANG, Esquel Group, CHN

Xuming ZHENG, Zhejiang Sci-Tech University, CHN

Ping ZHU, Qingdao University, CHN

Chaoyang FENG, The University of Toronto, CAN

Peter HAUSER, North Carolina State University, USA

Jinlian HU, The Hong Kong Polytechnic University, HKG

Peter Müller-BUSCHBAUM, Technische Universität München, GER

Gang SUN, University of California, Davis, USA

Bugao XU, University of Texas, USA

Yiqi YANG, University of Nebraska-Lincoln, USA

Xiangwu ZHANG, North Carolina State University, USA

Michael TYNDALL, Cotton Incorporated, USA

Charles YANG, The University of Georgia, USA

Sandy JOHNSON, President of AATCC, USA

Organizing committee

Chairman: Sandy JOHNSON, AATCC, USA

Executive chairman: Jiping WANG, ZSTU, China

Members (in alphabetical order):

Jack Danial, Yuhai GUO, Jianzhong SHAO, Xiaojun WANG, Minghua WU, Juming YAO, Dinghua XU, Qi ZHANG, Jinhuan ZHENG, Xuming ZHENG, Chengyan ZHU, Qi ZHONG

Conference secretariat

Secretary-general: Minghua WU

Deputy Secretary-general: Lan ZHOU, and Qi ZHONG

Secretary:

Guoqiang CAI, Ying CAI, Zhihai CAO, Liqin CHAI, Tao CHEN, Zhihua CUI, Yi HU, Ye LI, Yongqiang LI, Junxiong LIN, Dongming QI, Lili WANG, Jindan WU, Lei YANG, Lingmin YI, Lei ZHU

Sponsor for AATCC-SS

Introtech Ltd. Hongkong

