# PROGRAM OF
## THE 45th TEXTILE RESEARCH SYMPOSIUM IN KYOTO

September 14, 15 and 16, Kyoto, Conference Room No.1
The 60th anniversary hall, Kyoto Institute of Technology

### 14th September (Thursday)

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<tr>
<td>9:00~10:00</td>
<td>Registration</td>
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<tr>
<td>10:00~10:10</td>
<td>Opening</td>
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<tr>
<td>10:10~10:35</td>
<td>Keynote Speech 1: Dr. Tsuyoshi Nishiwaki, ASICS Corporation, Japan</td>
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<tr>
<td>10:35~12:15</td>
<td>Session 1: Fiber Science and Engineering</td>
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<td>12:15~13:30</td>
<td>Lunch</td>
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<td>13:30~15:30</td>
<td>Poster presentation (IF K101 in East Building No. 3)</td>
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<td>15:30~15:55</td>
<td>Keynote Speech 2: Professor B. K. Behera, Indian Institute of Technology Delhi, India</td>
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<td>15:55~17:35</td>
<td>Session 2: Nano Fibers and Smart Textiles</td>
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<td>Welcome Party (4F in Building No.13)</td>
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### 15th September (Friday)

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<tr>
<td>8:30~</td>
<td>Registration</td>
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<tr>
<td>9:30~9:55</td>
<td>Keynote Speech 3: Professor Xioming Tao, The Hong Kong Polytechnic University, H.K.</td>
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<tr>
<td>9:55~10:45</td>
<td>Session 3: Apparel Science and Production Technology</td>
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<td>10:45~11:00</td>
<td>Coffee break</td>
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<tr>
<td>11:00~12:15</td>
<td>Session 4: Fabric Handle and Sense Evaluation</td>
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<td>12:15~13:30</td>
<td>Lunch</td>
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<tr>
<td>13:30~13:55</td>
<td>Keynote Speech 4: Professor Jiri Militky, Technical University of Liberec, Czech Republic</td>
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<tr>
<td>14:05~15:20</td>
<td>Session 5: Composite and Industrial Textile (2F K201 in East Building No. 3)</td>
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<tr>
<td>15:20~15:35</td>
<td>Coffee break</td>
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<tr>
<td>15:35~16:50</td>
<td>Session 5: Composite and Industrial Textiles</td>
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<td>16:50~17:15</td>
<td>Session 6: Dyeing and Finishing</td>
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<td>17:15~18:00</td>
<td>Short trip to Symposium Party Venue</td>
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<tr>
<td>18:00~20:00</td>
<td>Symposium Party</td>
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### 16th September (Saturday)

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<tr>
<td>8:30~</td>
<td>Registration</td>
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<tr>
<td>9:15~10:05</td>
<td>Session 7: Designs and Quality of Textiles</td>
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<tr>
<td>10:05~10:20</td>
<td>Coffee break</td>
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<tr>
<td>10:20~11:55</td>
<td>Session 8: Science and Technology of Textile Machinery</td>
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<td>11:55~12:05</td>
<td>Closing Address</td>
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<td>13:00~</td>
<td>Excursion</td>
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14th September (Thursday)

9:00～10:00 Registration

10:00～10:10 Opening

10:10～10:35 **Keynote speech 1**

Chairperson: Prof. Toshiyasu Kinari (Kanazawa University)

**Textile impact on high performance sporting gear**

Tsuyoshi Nishiwaki

ASICS Corporation, Japan

10:35～12:15 **Session 1: Fiber Science and Engineering**

**Chairperson: Dr. Yoshihiro Yamashita (Osaka Seikei College)**

1. **Sound absorption and compression properties of perpendicular-laid nonwovens**
   Tao Yang, Xiaoman Xiong, Rajesh Mishra, Jan Novak, Jiri Militky
   Technical University of Liberec, Czech Republic

2. **Line lighting systems based on the side emitting optical fibers**
   Dana Kremenakova, Jiri Militky, Rajesh Mishra
   Technical University of Liberec, Czech Republic

**Chairperson: Prof. B.K. Behera (Indian Institute of Technology Delhi)**

3. **Simultaneous fiber structure formation and dyeing of poly(ethylene terephthalate) fibers through cold-drawing in ethanol**
   Dong Woo Go, Rina Khanum, Wataru Takarada, Arun Aneja*, Takeshi Kikutani
   Tokyo Institute of Technology, Japan
   * East Carolina University, USA

4. **Dependence of thermal-contact properties on compression of furs and fabrics**
   Jiang Shaochen, Shen Hua, Sachiko Sukigara
   Kyoto Institute of Technology, Japan

12:15～13:30 Lunch

13:30～15:30 **Poster presentation, Museum Tour**

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Obligation time is provided first half and latter half. First half of obligation is held in 13:30 - 14:30, and latter half of obligation is held in 14:30 - 15:30.

The number and alphabet following hyphen in the presentation number denotes obligation time, and whether award target poster. In the case of "1 or 2" indicate "first half or latter half of obligation", "a or b" indicate "poster judging object and poster not subject to review ", respectively.

**Poster session 1: Fiber Science and Engineering**

01P-1a **Tensile properties of high-strength aramid fibers after fatigue**
Suguru Yagi, Yuya Yomogizawa, Kaname Sugimura, Akihiro Suzuki, Katsufumi Tanaka, Midori Takasaki, Haruki Kobayashi

Kyoto Institute of Technology, Japan

02P-2b **Influence of electrolyte on the self-organization of liquid silk**
Yutaka Kawahara, Ayumi Sato

Gunma University, Japan
03P-1a Structure development of various poly(lactic acid)s in high-speed melt spinning process
Nanjaporn Roungpaisan, Wataru Takarada, Takeshi Kikutani
Tokyo Institute of Technology, Japan

04P-2b Unique multiple melting behavior of high-speed melt spun polylactide fibers and its kinetics analysis
Miyagi University of Education, Japan
* Gunma University, Japan
** Kyoto Institute of Technology, Japan
*** Tokyo Institute of Technology, Japan

05P-1a Improvement in filtration performance of hydrophobic nanofiber fabric by ethanol treatment
Yuya Kishida, Yasuhito Mukai
Nagoya University, Japan

06P-2b Heat sensitive filament for 3D printers
Hiroki Murotani, Takatoshi Nakatani, Futoshi Yamada, Kenji Hasegawa, Kenji Kode
UNITIKA LTD., Japan

07P-1a Study on formation of metallic oxide supported functional paper and its catalytic activity
Sota Sawaki, Haruhiro Ino, Yoichi Kodera*
Kyoto Institute of Technology, Japan
* National Institute of Advanced Industrial Science & Technology(AIST), Japan

08P-2b Resources of ethical down
Junya Kuroyanagi, Narumi Suda, Ken Kuroda*, Toshikatsu Kawada**
UMOU SCIENCE LAB, Japan
* ECO LAND, Japan
** Kawada Feather Co., Ltd, Japan

09P-1a Adsorption characteristics of protein by cibacron blue-supported nanofiber fabric
Takuro Sumi, Yasuhito Mukai
Nagoya University, Japan

10P-2b Selective adsorption characteristics of gold ions by nylon nanofiber fabric
Yasuhito Mukai, Tomoaki Tanabe
Nagoya University, Japan

11P-1b Proposal of “L∞PLUS” system for waste textile
Yoshinori Fujio, Keisuke Yamagata, Yasuaki Hara, Teruo Kimura*
Kurabo Industries LTD., Japan
* Kyoto Institute of technology, Japan

Poster session 2: Industrial Engineering and Textile Machinery

12P-2a Relationship between large deflection behavior and the components of woven fabric
Ryo Hashizume, Lina Wakako, Toshiyasu Kinari
Kanazawa University, Japan

13P-1b Acoustic properties and internal structure of foam containing pulp and foaming agent composed of acrylic polymer/liquid hydrocarbon
Mizue Kakehi, Takuma Kiribayashi*, Hideyuki Uematsu*, Shuichi Tanoue*
Industrial Technology Center of Fukui Prefecture, Japan
* University of Fukui, Japan
14P-2a **Twisting form in the twisting part of disc friction false-twisting machine**  
Satoshi Tomohiro, Naoto Kaneda, Toshiyasu Kinari*  
National Institute of Technology Fukui College, Japan  
* Kanazawa University, Japan

15P-1b **Flame retardant material for high visibility work clothes**  
Junji Hamada, Haruki Morikawa, Atsushi Kuwabara  
Toray Industries, Inc., Japan

16P-2a **Surging in false-twisting machine**  
Kouichi Hayashida, Naoto Kaneda, Toshiyasu Kinari*  
National Institute of Technology Fukui College, Japan  
* Kanazawa University, Japan

17P-1b **Relation between the surface gloss and the weave on the polyester fabric**  
Miwa Iwashita, Atsuji Masuda, Tetsuhiko Murakami, Seiji Kawabata,  
Shinya Seko*, Yoshiyuki Iemoto*, Hideyuki Uematsu*, Shuichi Tanoue*  
Industrial Technology Center of Fukui Prefecture, Japan  
* University of Fukui, Japan

18P-2b **Flow of non-newtonian fluid through a microchannel with an abrupt contraction**  
Kazunori Yasuda, Takayuki Hirai, Akichika Kimura, Mototsuke Sogo, Yukiharu Iwamoto  
Ehime University, Japan

**Poster session 3: Dyeing and Finishing**

19P-1a **Foaming of cellulose derivatives in supercritical CO₂**  
Tatsuya Suzuki, Satoko Okubayashi  
Kyoto Institute of Technology, Japan

20P-2b **Development of the wool non-chlorine machine washable method**  
Masukuni Mori  
Mori Consultant, Japan

21P-1a **Low temperature dyeing for natural fibre by using (+)-catechin**  
Kaito Okada, Takanori Matsubara*  
Tokushima University, Japan  
* College of Industrial Technology, Japan

22P-2b **Deodorant mechanism for model malodorous substances by mordant-dyed cotton and wool fabrics**  
Toshiko Amemiya  
Ochanomizu University, Japan

23P-1a **Hair colouring by using tea extracts**  
Katsuki Watanabe, Chihiro Sakurai*, Takanori Matsubara**  
Gifu University, Japan  
* Simane University, Japan  
** College of Industrial Technology, Japan

24P-2b **Levelness study of cotton fabric dyed in different solvents**  
Chi-wai Kan, Yiu-lun Tang  
The Hong Kong Polytechnic University, Hong Kong

25P-1a **Dyeing for natural fibre by utilising chemical reaction of anthocyanins part I**  
**Dyeing methods - dyeability relations**  
Asuka Sato, Hinata Inoue, Yoshihito Niimoto, Takanori Matsubara, Kaori Miura*, Kenichi Fujimori*  
College of Industrial Technology, Japan  
* Glico Nutrition Co., Ltd., Japan
26P-2b **Modification of wool fiber surface using combined keratinase-protease treatment and the characterization**  
Chendi Tu, Sachiko Sukigara  
Kyoto Institute of Technology, Japan

27P-1a **Dyeing for natural fibre by utilising chemical reaction of anthocyanins part II Effects of dyeing conditions**  
Yoshihito Niimoto, Hinata Inoue, Asuka Sato, Takanori Matsubara,  
Kaori Miura*, Kenichi Fujimori*  
College of Industrial Technology, Japan  
* Glico Nutrition Co., Ltd., Japan

*Poster session 4: High Functional Textile*

28P-2a **Preparation of carbonized PAN nanofiber fabric and its properties of solute adsorption**  
Bijun Huang, Yasuhito Mukai, Kazuma Osawa, Toshihira Irisawa, Yasuhiro Tanabe  
Nagoya University, Japan

29P-1b **Development of silk based artificial blood vessel by electro-spinning method**  
Yoshihiro Yamashita, Yoshiyuki Tsukahara*, Masataka Sata**,  
Ikue Suzuki***, Toshifumi Hiraoka;***, Tetsuo Asakura***  
Osaka Seikei College, Japan  
* The University of Shiga Prefecture, Japan  
** Tokushima University, Japan  
*** Tokyo University of Agriculture and Technology, Japan

30P-2a **Optimization of plasma processing conditions for improving on adhesion of glass fiber composite materials**  
Shota Naito, Jian Shi, Mamoru Mizuno, Masaya Sugimoto  
Akita Prefectural University, Japan

31P-1b **Study on the preparation microcapsule of AlP/ ZHS and the flame retardation of PVC membrane materials**  
Jian Han, Juanjuan Su, Bin Zhang  
Zhejiang Sci-Tech University, China

32P-2a **Hoop tension evaluation of CFRP with braided structure by hydraulic experiment**  
Kento Kawai, Takuru Suehiro, Nanang Endriatmo, Toshiyasu Kinari  
Kanazawa University, Japan

33P-1b **Resinification technique of feather keratin**  
Yutaka Kawahara, Hiroaki Ohnishi  
Gunma University, Japan

34P-2a **Mechanical properties of needle punched chopped strand mat composite with open hole**  
Daiki Ichikawa, Ryo Marui*, Tohru Morii**, Akio Ohtani  
Kyoto Institute of Technology, Japan  
* Marui Textile Machinery Co., Ltd, Japan  
** Shonan Institute of Technology, Japan

35P-1b **Development of the molding method for polyurea**  
Yutaka Kawahara, Shunsuke Otoyama  
Gunma University, Japan

36P-2b **An estimation method of material damping properties for textile composites by mesh superposition method**  
Yoshifumi Suzuki, Kin’ya Matsumoto, Yasumasa Nakanishi  
Mie University, Japan
**Poster session 5: Fabric Handle and Comfort**

37P-1b *Influence of the brand name and the price on evaluating in “shittori” for baby’s underwear*
Yukari Suehiro, Sachiko Sukigara*
Mukogawa Women's University, Japan
* Kyoto Institute of Technology, Japan

38P-2a *Durability and comfort of carseat*
Funda Buyuk Mazari, Antonin Havelka, Adnan Mazari
Technical university of Liberec, Czech Republic

39P-1b *Visual surface roughness of legs with pantyhose and color effect of pantyhose fabric*
Lina Wakako, Toshiyasu Kinari
Kanazawa University, Japan

40P-2a *Survey on thermal condition and micro climate in bedding for assessment of sleeping comfort – Comparison between Hong Kong and Japan –*
Yuki Kobayashi, Takayuki Ueno, Naohide Nishiyama, Yoshitaka Niimi, Hiroyuki Kanai,
Siyu Lin*, Xiao Liao*, Lei Yao*, Edwin Keh*
Shinshu University, Japan
* Hong Kong Research Institute of Textiles and Apparel, Hong Kong

41P-1b *A measure of comfort: KES texture measurement technology for objective evaluation*
Sean Huang, Kei Kawauchi
Kato Tech Co., Ltd., Japan

42P-2a *Analysis of frictional behavior of spunbond nonwoven by whisker type tactile sensor*
Thinzar Phyo Wyint***, Toshiyasu Kinari*, Hiroshi Tachiya*,
Lina Wakako*, Mari Inoue**
* Kanazawa University, Japan
** Kobe University, Japan
*** Yangon Technological University, Myanmar

43P-1b *Quality and preference of jackets: a comparison between students and non-students*
Saori Kitaguchi, Mariko Kumazawa, Kou Sugahara, Takahiro Iida, Tetsuya Sato,
Sachiko Sukigara
Kyoto Institute of Technology, Japan

44P-2a *Friction properties for fabrics by linear/rotational dragging with tactile sensor*
Shinnosuke Yoneda, Toshiyasu Kinari, Hiroshi Tachiya, Lina Wakako
Kanazawa University, Japan

45P-1b *A study of the interactions of softening agents and nanoparticles with respect to the handle of wool fabrics*
Momoko Sugimura, Steve McNeil*, Larissa Zaitseva*
Niigata University, Japan
* AgResearch Ltd, New Zealand

46P-2a *Application of ring method for denim fabrics and its relations with mechanical and surface properties*
Nazli Uren, Ayse Okur
Dokuz Eylul University, Turkey

47P-1b *Appearance and handle design of cotton crepe fabrics for women’s dresses*
Hiroko Yokura, Sachiko Sukigara*
Shiga University, Japan
* Kyoto Institute of Technology, Japan
48P-2b The price of the T-shirt which Japanese students assume
Ibuki Hosomi, Kouhei Kagotani, Pandya Shiddharth Pandya*, Yukie Tsuji
Kobe Gakuin University, Japan
* Kobe International University, Japan

49P-1b Research about the kimono which put on at a coming-of-age ceremony
Sae Taguchi, Kousuke Hamada, Ryouta Syouji, Siddharth Pandya*, Yukie Tsuji
Kobe Gakuin University, Japan
* Kobe International University, Japan

15:30～15:55 Keynote speech 2
Chairperson: Prof. Takeshi Kikutani (Tokyo Institute of Technology)
3D fabric and their applications
B. K. Behera
Indian Institute of Technology Delhi, India

15:55～17:35 Session 2: Nano Fibers and Smart Textiles
Chairperson: Prof. Teruo Kimura (Kyoto Institute of Technology)
5. Plasma mediated coating of fibers by conductive layers
Jiri Militky, Veronika Tunakova, Roman Pulicek, Josef Vecernik*
Technical University of Liberec, Czech Republic
*:Vecernik s.r.o., Alsovice, Czech Republic

6. Mechanical properties of the flexible conductive yarn
Atsuji Masuda, Takahiro Tsuji, Akiko Uejima,
Tomoaki Harii*, Yoshihiro Iwasaki*, Eiji Tajima*, Takayoshi Koizumi*
Industrial Technology Center of Fukui Prefecture., Japan
*: URASE CO., Ltd., Japan

Chairperson: Dr. Tetsusei Kurashiki (Osaka University)
7. Formation of superamphiphobic inorganic nanofiber mats using silane coupling agents with short perfluoroalkyl chain
Koji Nakane, Shuya Gao, Akiyoshi Ohgoshi*, Tadayuki Isaji*, Masaaki Ozawa*
University of Fukui, Japan
*: Nissan Chemical Industries,Ltd., Japan

8. Molding and mechanical property of keratin based composite material using ionic liquid
Haruhiro Ino, Keisuke Komuro, Teruo Kimura, Yoichi Kodera*
Kyoto Institute of Technology, Japan
*: National Institute of Advanced Industrial Science & Technology (AIST), Japan

18:00～19:30 Welcome Party

15th September (Friday)

8:30～ Registration

9:30～9:55 Keynote speech 3
Chairperson: Prof. Sachiko Sukigara (Kyoto Institute of Technology)
Textile-based wearable system for monitoring upper-arm muscle contraction during dynamic flexion
Xiaoming Tao
The Hong Kong Polytechnic University, H.K.
9:55～10:45  **Session 3 : Apparel Science and Production Technology**

Chairperson: Prof. Xioming Tao (The Hong Kong Polytechnic University)

9. **Thermophysiological and sewing properties of firefighter clothing**
   Adnan Mazari, Antonin Havelka, Funda Buyuk Mazari
   Technical University of Liberec, Czech Republic

10. **The compression properties of towel under various water contents**
    Yuriko Kibayashi, Hiroko Yokura*, Sachiko Sukigara
    Kyoto Institute of Technology, Japan
    * Shiga University, Japan

- Coffee Break 15 min -

11:00～12:15  **Session 4 : Fabric Handle and Sense Evaluation**

Chairperson: Prof. Jian Han (Zhejiang Sci-Tech University)

11. **Effect of fiber length on hand and dimension changes of cotton knit fabrics by laundering**
    Nagisa Hirata, KyoungOk Kim, Masayuki Takatera, Kyosuke Kanda*, Masatoshi Kawakami*
    Shinshu University, Japan
    * Kondo Cotton Spinning Co., Ltd., Japan

12. **Objective evaluation of the handle of towels**
    Mari Inoue, Kazuki Chiba, Hiromi Nakaya, Yusuke Hayashi
    Kobe University, Japan

13. **Nonlinearity evaluation of soft materials by ball indentation imitating palpation**
    Atsushi Sakuma, Asuka Nagai, Etsuko Takayama
    Kyoto Institute of Technology, Japan

12:15～13:30  Lunch

13:30～13:55  **Keynote speech 4**

Chairperson: Prof. Morihiro Yoneda (Nara Women's University)

**Multilayered perpendicular nonwovens for advanced thermal and acoustic insulation**
Jiri Militky, Rajesh Mishra, Mohanapriya Venkataraman, Tao Yang
Technical University of Liberec, Czech Republic

14:05～15:20  **Session 5 : Composite and Industrial Textiles**

Chairperson: Prof. Mitsuo Matsudaira (Kato Tech Co., Ltd.)

14. **Interesting different mechanical behaviours of 3D warp interlock fabrics for composite material**
    F. Boussu, D. Soulat, C. Huniade, S. Picard*
    * ENSAIT, GEMTEX Université de Lille1, France

15. **Activated carbon structures from fibrous wastes**
    Jiri Militky, Vijiy Vageti, Salman Naeem
    Technical University of Liberec, Czech Republic

16. **Introduction of new fire blocking textile “GULFENG®” composed of PPS and Ox-PAN**
    Masaru Harada, Hiroshi Tsuchikura, Atsushi Kuwabara
    Toray Industries, Inc., Japan

- Coffee Break 15 min –
Session 5: Composite and Industrial Textiles

Chairperson: Dr. Tsuyoshi Nishiwaki (ASICS Corporation)

17. Optimization of formulations with basalt fiber
   Promoda Kumar Behera, Vijay Baheti, Jiri Militky, Holmer Savastano Junior
   Technical University of Liberec, Czech Republic

18. Laser engraving based application of silica aerogel into nonwovens for thermal insulation
   Xiaoman Xiong, Rajesh Mishra, Jiri Militky, Hiroyuki Kanai*
   Technical University of Liberec, Czech Republic
   * Shinshu University, Japan

Chairperson: Prof. Francois Boussu (ENSAIT, GEMTEX Université de Lille1)

19. Fatigue damage analysis under tension loading for textile composites
   Kazutaka Mukoyama, Koushu Hanaki, Tetsusei Kurashiki
   Osaka University, Japan

20. Study on the damage propagation under three point bending for a short glass fiber reinforced composites by an injection mold
   Li Xingshengsheng, T.Kurashiki, M.Zako, K.Kobayashi*, T.Yamamoto*, G. Yamada*, T.Sakakibara*
   Osaka University, Japan
   * ITOCHU Techno-Solutions Corp, Japan

Session 6: Dyeing and Finishing

Chairperson: Dr. Chi-wai Kan (The Hong Kong Polytechnic University)

21. Casein treated flame retardant cotton textiles
   Sajid Faheem, Vijay Baheti, Maros Tunak, Jakub Wiener, Jiri Militky
   Technical University of Liberec, Czech Republic

22. Soil resistant finishing technology “TECHNOCLEAN®”
   Shota Takeshita, Atsushi Kuwabara, Keiji Takeda
   Toray Industries, Inc., Japan

23. Dyeability in hair dyeing using dyestuffs prepared from biobased materials
   Hidekazu Yasunaga, Akiko Takahashi, Kazue Ito, Masahisa Ueda, Saina Taniguchi,
   Asami Yano, Chinami Seki, Hiroshi Osaki, Tomoyasu Kida*, Takanori Matsubara*
   Kyoto Institute of Technology, Japan
   * College of Industrial Technology, Japan

- Coffee Break 15 min –

Session 6: Dyeing and Finishing

Chairperson: Dr. Hidekazu Yasunaga (Kyoto Institute of Technology)

24. Present situation of supercritical fluid dyeing and finishing
   Teruo Hori, Isao Tabata, Kazumasa Higaki
   University of Fukui, Japan

25. Synthesis of nano-porous flexible para-aramid aerogel fiber
   Kazumasa Higaki, Arata Uchimura, Yumiko Suzuki, Lei Du, Isao Tabata, Teruo Hori
   University of Fukui, Japan

26. Improvement in dyeability of UHMPWE fiber using supercritical CO₂
   Jaehyuk Ma, Satoko Okubayashi
   Kyoto Institute of Technology, Japan

18:00 ~ 20:00 Symposium Party
16th September (Saturday)

8:30 ~  Registration

9:15 ~ 10:05  **Session 7: Designs and Quality of Textiles**

*Chairperson: Dr. Rajes Mishra (Technical University of Liberec)*

27. **Numerical analysis for deformation behavior of textile under bi-axial tensile loading**
   Yuki Kitahara, Atsushi Yokoyama
   Kyoto Institute of Technology, Japan

28. **Measurement of effective thermal conductivity of synthetic and regenerated fiber assemblies in low fiber volume fraction**
   Morihiro Yoneda, Ai Ogawa, Michiyo Tada
   Nara Women's University, Japan

- Coffee Break 15 min –

10:20 ~ 11:55  **Session 8: Science and Technology of Textile Machinery**

*Chairperson: Prof. Atsushi Yokoyama (Kyoto Institute of Technology)*

29. **Research into the causes of center marks in spandex plated fabric**
   Shunji Takeuchi, Kazuki Nishioka, Hideyuki Uematsu, Shuichi Tanoue
   University of Fukui, Japan

30. **An experimental study of the roller drafting parameters**
   Tatsumori Matsumoto
   Murata Machinery, Ltd., Japan

*Chairperson: Prof. Jiri Militky (Technical University of Liberec)*

31. **Vortex spinning - technology, applications and market**
   Akitsugu Mori
   Murata Machinery Japan

32. **Bio innovative design and manufacture of CFRP preform by braiding technology**
   Toshiyasu Kinari, Nanang Endriatno, Kento Kawai, Takuru Suehiro, Jiro Sakamoto, Satoshi Kitayama
   Kanazawa University, Japan

11:55 ~ 12:05  **Closing Address**

12:05 ~  Excursion