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## **HKRITA Demonstrates Technologies for Healthy Aging at TKO Plaza**

The Hong Kong Research Institute of Textiles and Apparel (HKRITA) held a technology exhibition at TKO Plaza from 5 to 21 January 2018. A kick-off ceremony was held today. We were honoured to have Dr David Chung, JP, Acting Secretary for Innovation and Technology of The Government of the Hong Kong Special Administrative Region and venue sponsor, Ms Vanessa Cheung, Group Managing Director, Nan Fung Development Limited, as officiating guests in the ceremony.

Elderly population is expected to grow in Hong Kong. From the figures released by the Census and Statistics Department in September 2017, the number of people from age 65 onwards is expected to be more than double in the coming 20 years.

“Technology advancement shapes the course of society development. Improving the well-being of our elderly is one of our key research directions. The innovations showcasing here are meant to give a better quality of life to our elderly,” Mr Edwin Keh said, Chief Executive Officer of HKRITA.

The exhibition will showcase nine technologies about health care for silver age at TKO Plaza. Details are given below.

### Technology Exhibition @ TKO Plaza

Date: 5 - 21/01/2018 (12noon – 8pm)

Venue: Zone B, Level 1, Tseung Kwan O Plaza, New Territories

### **Displayed Technologies:**

#### **1) Multi-functional (Water-, Oil-repellent, Soil- and Wrinkle-resistant) Apron**

The multi-care finishing technology provides water/oil/soil repellency and wrinkle-free treatment on apron in one step. Multi-care finishing is a new technology which introduces “elastic crosslinking” to the Lotus Nano repellent system. Elastic crosslinking not only offers wrinkle-recovery function to the textiles, but also minimizes strength-loss. Moreover, crosslinking effect improves the durability of the multi-functional properties on the textiles products.

#### **2) Self-cleaning Treatment**

Self-cleaning function is formed by adding a thin layer of nano TiO<sub>2</sub> on fabric surface. The nano layer breaks down and removes dirt, odour, bacteria, colour stains, harmful organic materials, such as formaldehyde and other carbon-based molecules with the help of visible light or indoor light source in a process of photocatalysis. The treatment can apply to textile materials, such as cotton, polyester, nylon and other natural and synthetic materials. The technology can be applied to sportswear, leisurewear, footwear, home textiles and furnishings, automobile interior fabrics, medical fabrics, technical textiles, soft toys and leathers.

#### **3) Innovative Spinning System for Chitosan Yarn**

Chitosan, known for its antibacterial property, is derived from the exoskeletons of crustaceans such as crabs and shrimps. Chitosan fibre is made by wet spinning technology. However, during the spinning process the yarns exhibit a tendency to lock or wind together due to the material's high electrostatic discharge. To eliminate the existing spinning limitations of chitosan yarn, the innovative spinning system employed the triboelectric electrostatic theory to modify the spinning machine slightly. Results show that the desired properties of the yarn (anti-bacterial, elasticity, laundering durability and comfort) are largely maintained without creating much loss.

#### **4) Fine Worsted Yak Yarns and Fabrics**

Yak mainly survives at high altitude in the Tibetan Plateau and the Himalayas. There are over 16 million yaks in the world and 80% of them are in China. Yak yarn possesses excellent strength, warmth and breathability. It is soft and feels like cashmere. However, machine conversion of yak fibres into a useful yarn is challenging, particularly to obtain a fine yarn. This project developed a new spinning method which used a multi-level spinning triangle to produce fine worsted yak yarns with good yarn properties such as high strength, low hairiness and good evenness. Knitted fabrics are thin and soft, and exhibit better air permeability and heat retention than those made with cashmere and merino wool fibres.

### **5) Anti-strip Jumper**

The anti-strip jumper is specially designed for people with emotional or behavioural disorders, and they may need to wear diapers due to physical needs. Jumpsuits currently available look like a medical uniform. Therefore, the research team spent a lot of effort on design and cutting. A rigorous laundry process at high temperature is required in the care centre which leads to the garment getting damaged easily, while using heavy and durable fabrics for the jumpsuit development may harm the sensitive skin of elderly patients. To address this problem, the research team tested various fabrics for breathability, water resistance and breaking load. These tests ensured that the fabric used in the new jumpsuits would meet international standards, providing the wearer a garment both functional and comfortable.

### **6) Thermal Conductive Textile**

The formation of the thermal conductive fabric is achieved by using a combination of textile-based technologies to knit together conductive fibres. The theoretical basis for this process is provided by the resistive network model in which properties of sheet resistance, length resistance and contact resistance provide various fabric structure and density.

The thermal conductive textile has a wide range of applications such as outdoor apparel products, home thermal products, healthcare and medical treatments and potential areas where soft thermal comfort is required.

### **7) High-performance Wheelchair Cushion**

This project developed the high performance wheelchair cushion for the Boccia athletes of the Hong Kong Paralympic Committee & Sports Association for the Physically Disabled (HKPCSAPD), fulfilling their physiological and biomechanical requirements during training and competition. Athletes will be more comfortable by using the developed cushion and have a better chance to avoid injury.

The high-performance wheelchair cushion has a multi-layer functional structure. The friction coefficient of its surface material ensures flexibility and stability on movement. The cushion is made of 3D fabrics and special sponges in order to remove pressure and provide suitable support. Different materials are applied to the ischial tuberosity areas of the cushion, allowing athletes smooth movement.

### **8) Bio-functional Socks**

Aging makes skin more susceptible to dryness, even in a relatively warm and humid environment like Hong Kong. Dry skin on the feet, often experienced by the elderly especially during the winter months, can lead to roughness, peeling, cracking or scaling.

### **9) Wearable Electronic for Better Quality Community Care of the Elderly**

The outer apparel with GPS tracking system for elderly people include a wind-proof and water proof jacket, GPS and iBeacon tracking systems. It helps the caretakers effectively manage the elderly during outdoor activities. This is a project collaborated among HKRITA, LSCM, and ASTRI.

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