



**Topic of the Speech:**

From R&D to Closed-loop Textile Recycle

**Dr. Lei Yao**

The Hong Kong Polytechnic University  
China



**Dr. Lei Yao** obtained her Bachelor of Science from Zhejiang Medical University and Master of Science in Zhejiang University, China. Dr Yao received her PhD in Textile Technology from The Hong Kong Polytechnic University, Hong Kong.

Her current research interests centre around: textiles-human interactions, textile technologies and industry sustainability. She is now leading a research team and doing applied research on high-performance textiles, water-less textile technologies and post-consumer textile recycle.

She has considerable research experience of textile and clothing and insight into applied research, R&D roadmap and innovation strategy.

## ABSTRACT SUBMISSION



-For invited speaker only

### **From R&D to Closed-loop Textile Recycle**

Lei Yao

*The Hong Kong Research Institute of Textiles and Apparel*

\*Presenter's email: [gloria@hkrita.com](mailto:gloria@hkrita.com)

#### **ABSTRACT (NO MORE THAN 500 WORDS:)**

Nowadays, closed-loop textile recycle is critical issue to the industry and society. Solutions for the waste textile recycle and reuse is highly demanded. Technologies, such as auto-sorting, blended separation, fiber regeneration, quality control and tractability are hot topics.

To understanding the overall picture of the textile recycle; technologies from chemical, biological, and mechanical recycle have been reviewed. Methods for blended fabric separation have been studied and scanned. System development for lab scale and pre-industrial scale has been conducted, and economic analysis has been performed to understand the potential industry scale up opportunities.

Meanwhile, performance enhancement for the recycle fiber has been explored via chemical and mechanical methods, i.e. polymerization and decolors. The performance of the recycle fiber has been evaluated for go back to garment manufacturing application.

Through the process, solutions for closed-loop textile recycle are identified. Moreover, it is identified most importantly, it is a systematic program, not only R&D solution, but also industry, products developer, government policy maker, education sectors, and consumer play very important role to achieve closed-loop textile recycle, achieve a sustainable economy.