

**Topic of the Speech:**

Recent Advances, Sustainable Developments and Challenges in Medical Textiles Post Covid-19 Pandemic

**Dr. Prabhuraj Venkatrman**

Manchester Fashion Institute  
Manchester Metropolitan University  
Manchester, UK



**Dr. Prabhuraj Venkatrman** is a textile technologist and a Chartered Fellow of the Textile Institute. Research interests include innovative sustainable materials and fashion, functional apparel and technical textiles. He recently completed a GCRF-funded project with the Institute of Chemical Technology, Mumbai, India, that developed antimicrobial textiles using plant-based nano-emulsions that are durable and environmentally friendly. Other interdisciplinary collaborations include projects with colleagues from Science and Engineering at Manchester Met University with the Department of Life Sciences and Institute of Sport in evaluating antimicrobial finishing of textiles and developing smart socks for monitoring diabetic patients' feet. In addition, he works on the sustainable manufacturing of natural polymers with colleagues from Cranfield University, UK., developing alginate nano fibres for medical applications, and he is currently working with Pangaia, London, to explore sustainable biopolymers for activewear applications. He also serves as research degree coordinator for MFI and supervises UG, postgraduate taught dissertations and doctoral researchers.

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## ABSTRACT SUBMISSION

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### **Recent Advances, Sustainable Developments and Challenges in Medical Textiles Post Covid-19 Pandemic**

Prabhuraj Venkatraman

*<sup>1</sup>Manchester Metropolitan University, Manchester Fashion Institute, Cavendish Street,  
Manchester M15 6BR United Kingdom*

\*Presenter's email: [p.venkatraman@mmu.ac.uk](mailto:p.venkatraman@mmu.ac.uk)

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

The recent pandemic has induced a sudden demand for medical textiles to meet the needs of the healthcare community over a shorter time frame. In addition, public awareness toward improved lifestyle and the need for increased sanitation led to the development of new material blends and compositions in manufacturing woven, knitted, nonwoven, braided, and various other structures for medical textiles. These trends also led to the expansion of manufacturing operations globally, leading to increased consumption of medical and hygiene products. Furthermore, using disposable and surgical PPE (personal protective equipment) and hygiene products (drapes, bedsheets, shoe covers, caps, wipes, and sanitary products) in healthcare settings has also contributed to a gradual increase in medical textile waste, highlighting the need for improved waste disposal management systems. Besides, most PPE and other disposable products from synthetic materials may not degrade, causing significant landfill waste. Hence, there is a pressing need to move from dependence on fossil fuel-based materials (polyester/polypropylene) to more environmentally friendly processes [reduce greenhouse gas emissions, energy and water usage], bio-based materials and chemical-free finishes. This research highlights recent innovations in medical devices and discusses the benefits of sustainable materials, bio-based polymers, and plant-based antimicrobial finishes for healthcare and protective textiles. In addition, the study recommends the potential of recycling PPE and medical textiles by implementing a closed-loop mechanism within the supply chain. Finally, it also indicates the safe disposal of medical textile waste (incineration and other processes) and highlights the challenges of dealing with the medical waste generated after the recent pandemic and its long-term environmental impact.