Sustainable Textiles: Production, Processing, Manufacturing & Chemistry

Series Editor

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Sustainability in the Textile and Apparel Industries

Sustainable Textiles, Clothing Design and Repurposing

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Preface

Eighty percent of the impacts are decided at the design stage, and hence it is crucial to implement sustainability aspects and strategies in the design stage. The crux of the book is to deal around the sustainability aspects in textile design and clothing design. This volume addresses many important topics such as innovative sustainable apparel design: application of CAD and upcycling process, repurposing of fashion, etc. It begins with the work titled *Sustainable Textile Designs Made from Renewable Biodegradable Sustainable Natural Abaca Fibers* developed by Feristah Unal, Ozan Avinc, and Arzu Yavas; it gives detailed information regarding abaca fiber, its production, its chemical structure, its physical and mechanical properties, and also sustainable textile designs made from sustainable abaca fiber.

The following chapter, *Analysis of Zero Waste Patternmaking Approaches for Application to Apparel*, written by Ellen McKinney, Sunhyung Cho, Ling Zhang, Rachel Eike, and Eulanda Sanders, conducts a systematic review on zero waste patternmaking and its application to the apparel industry.

Then, Mercy Rugedhla, Disele P. L. P, Moalosi R., and Fidzani L.C. develop the chapter titled *Factors that Affect Sustainability in the Textile Design Industry in Kadoma, Zimbabwe.* They explore the need to develop sustainable textiles and materials in Kadoma, Zimbabwe, and outline the factors that affect sustainability in textile designing companies in Kadoma, explaining how the textile industry can gain sustainability through the use of sustainable textile production and people-centered designing methods.

Subsequently, in chapter *Contributions to Sustainable Textile Design with Natural Raffia Palm Fibers,* by Feristah Unal, Arzu Yavas, and Ozan Avinc, the purpose of writing is to detail the structure, properties, production methods, and end use applications and designs of the raffia palm fibers.

Moving on to the next chapter, *Innovative Sustainable Apparel Design: Application of CAD and Redesign Process,* Chanmi Hwang and Ling Zhang present insights for designers, researchers, and educators seeking innovative ways to practice redesign activities within sustainable apparel design methods at micro- and macro-levels of the apparel industry.

The following chapter entitled, *Bacteria Working to Create Sustainable Textile Materials and Textile Colorants Leading to Sustainable Textile Design*, by Fatma Filiz Yıldırım, Arzu Yavas, and Ozan Avinc, explores in detail the possibilities and use of sustainable bacterial cellulose for textile substrates and sustainable bacterial pigments as sustainable textile colorants.

Later, R. Rathinamoorthy, in the chapter entitled *Sustainable Clothing Designs for Fashion: Design Strategies and Its Implementation Possibilities*, analyzes the importance of implementing the sustainable strategies in design stage along with the role designers. It also discusses applications of design for disassembly (DfD), design for zero waste, design for longevity, design for co-design, design for end of life (EoL), etc. in the fashion industry.

In the following chapter, *Contribution of UV Technology to Sustainable Textile Production and Design,* Feristah Unal, Ozan Avinc, Arzu Yavas, Hüseyin Aksel Eren, and Semiha Eren explore ultraviolet (UV) and UV technology, usages, contributions, and production efficiency advantages to sustainable textile production and design (e.g., the use of UV technology in decolorization and purification of textile wastewaters, pretreatment and surface modification processes prior to coloration processes, UV curing process, and pilling problem prevention).

In the next chapter, *Repurposing Design Process* by Rachel Eike, the term "repurposing" is used to describe the process that utilizes discarded textiles to create new fashion (textile-based) products. It provides and analyzes the four repurposing levels through case study application to detail the creative design.

Dr. Sheetal Jain in his chapter, *Doodlage: Reinventing Fashion via Sustainable Design*, explores the emergence of an alternative notion to luxury, away from the ubiquitous luxury conglomerates and their dominant luxury brands.

Then, *Sustainability in Textile Design with Laser Technology*, developed by Feristah Unal, Arzu Yavas, and Ozan Avinc, analyzes the contribution of laser technology, as a dry and clean method, to sustainable textile production and design.

Finally, Veena Rao, Rajesh Kumar, Aysha Shaima, and Venkatachalam A, in their chapter *University Intervention in Inculcating Design Practices for Sustainable Fashion*, explore the model and role that involves stakeholders and institutions of higher education on ecological sustainability and sustainable design practices among the budding designers.

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