

UPCYCLING

Eco-fabrication of antibacterial nanofibrous membrane with high moisture permeability from wasted wool fabrics

Zhong, X., Li, R., Wang, Z., Wang, W., Yu, D. 2020. Eco-fabrication of antibacterial nanofibrous membrane with high moisture permeability from wasted wool fabrics, *Waste Management*, 102, 404-411

Wasted wool fabrics are a kind of textile waste source and the upcycle of them can not only benefit the environmental protection, but also turn waste into treasure by developing other potential applications. In this work, ionic liquid (IL) 1-butyl-3-methylimidazolium chloride ([Bmim]Cl) was used as a green solvent to upcycle wasted wool fabrics into a wool keratin (WK)/IL/polyacrylonitrile (PAN) composite nanofibrous membrane with good antibacterial and high moisture permeability through electrospinning. The morphology and structure of the regenerated nanofibrous membrane were characterized by Scanning Electronic Microscopy (SEM), Energy Dispersive Spectrometer (EDS), Fourier Transfer Infrared Spectroscopy (FTIR). The antibacterial test demonstrates that it has 89.21% inhibition rate against *E. coli*, and 60.70% against *S. aureus*. Furthermore, the keratin containing in the membrane can effectively improve the hydrophilic property of it, as Moisture Management Test (MMT) indicates that it performs an excellent wetting performance and water transport property. In addition, IL is supposed to be recycled from the composite membrane through immersing in distilled water, which makes the fabrication process green and sustainable.

Development of new treatment methods for multi material textile waste,

Jenull-Halver, U., Holzer, C., Piribauer, B., Quartinello, F. 2020. Development of new treatment methods for multi material textile waste, *AIP Conference Proceedings*, 2205

The EU's new circular economy directive presents a substantial challenge for the polymer processing industry, in the course of which this study has been initialized. The aim is to upcycle textile waste from various sources and to produce textiles again or technical parts from the recycled material with a high demand on mechanical and thermodynamic

properties. In this study several textile waste streams were examined. There were two waste streams from home textiles (towels, bed sheets, etc) and one waste stream from industrial textiles (sieves and felts for paper and cement industry). The home textiles are a blend of ~50 wt.% polyethylene terephthalate (PET)-fibre and ~50 wt.% cotton fibre. One central task of this study was to develop an enzymatic process to break down the cotton fibres and to retrieve the pure PET-fibres. In the following steps the gained PET fibres will be spun again to fibres and woven into towels, as in the original application. Additionally, the textiles will be tested according to oecotex. The second waste stream, three different polyamide (PA) and PA blends were tested for their suitability for injection moulding and spinning. These materials will be tested for selected products which have to comply with very high standards and are partially used in safety-critical applications.

[Consumer interest in upcycling techniques and purchasing upcycled clothing as an approach to reducing textile waste](#)

Bhatt, D., Silverman, J., Dickson, M.A. 2019. Consumer interest in upcycling techniques and purchasing upcycled clothing as an approach to reducing textile waste, *International Journal of Fashion Design, Technology and Education*, 12(1), 118-128

This study investigates the constructs of environmental concern, consumer creativity, and fashion consciousness and examines the relationships between these variables and consumer interest in learning upcycling techniques and purchasing upcycled clothing. Students (n = 120) at a Mid-Atlantic university were surveyed with an instrument created for the study using multi-item scales to measure each variable. Simple linear regression and multiple regression tests were run to measure the strength, direction, and significance of the hypothesised relationships. Results show a positive and significant relationship between interest in learning upcycling techniques with environmental concern and with consumer creativity, as well as between interest in purchasing upcycled clothing with environmental concern and with fashion consciousness. The findings can be used by brands selling upcycled apparel to successfully target creative, as well as environmentally and fashion-conscious, consumers to limit post-consumer textile waste.

[“No Need for Nudism”: Children’s Clothing in the United States, 1940 to 1945](#)

Mower, J.M. 2019. “No Need for Nudism”: Children’s Clothing in the United States, 1940 to 1945, *Dress*, 45(2), 173-181

This study explores the influence of World War II on the United States infant and children’s clothing industries. Relying on the federal records of the Office of Price Administration’s

Apparel Enforcement Division, periodicals, extant objects, and photographs, this study concludes that general military requirements of textiles and a spike in births, coupled with federal wartime policies, resulted in shortages of infant and children's wear throughout the United States. Even with these shortages, consumers, mostly mothers, were expected to make do. This study also explores the influence of war on infant and children's dress and strategies recommended to and employed by wartime mothers to upcycle worn-out clothes. The research sheds light on wartime culture and social expectations of mothers with a nation at war.

A slow fashion lab in Indonesia: mapping landscape of urgencies in developing countries

Murwanti, A. 2019. A slow fashion lab in Indonesia: mapping landscape of urgencies in developing countries, *Landscape Architecture Frontiers*

This article highlights the urgencies and challenges in interpreting slow fashion in Indonesia to join the global movement. The term "slow fashion" as technical production was never familiar in Indonesian society despite a slow process is an integrated part of Indonesia cultural heritage - especially in producing the textile craft practice and repairing clothing to the tailor. The term "slow fashion" as a modern lifestyle philosophy is totally a new thing in Indonesia. When this term was brought to develop exhibition by IKAT/eCUT Project Goethe-Institut in 2017, the biggest challenge was to map the fast fashion landscape and to explore the practice of this philosophy in Indonesia. This list of urgencies will highlight the realistic way to adapt the concept of slow fashion in the country. Since western fast fashion products are not massively occupying major Indonesian market, the parameter of counter must be slightly shifted into a contextual one. The term slow fashion then should be interpreted in a broader way than what has been set in the West, including extending the principle pillars to fit with Indonesia situation and context.

Redesign and upcycling - a solution for the competitiveness of small and medium-sized enterprises in the clothing industry

Cuc, S. and Tripa, S. 2018. Redesign and upcycling-a solution for the competitiveness of small and medium-sized enterprises in the clothing industry. *Industria Textila*, 69(1), 31-36

The paper aims to open a new field of research applicable to small and medium enterprises in the clothing industry, namely, the focus on new product design by increasing the efficiency of fabric use and recycling and a value chain perspective that concentrates on downstream in the chain. The main objective of this paper is to present how small and medium-sized enterprises (SMEs) in the clothing industry can achieve a competitive

advantage by using a sustainable approach. This study provides useful solutions for understanding the product development processes for fashion to rethink reuse or upcycle the waste in the production stage. We propose a better connection between different links of the value chain: design, production, marketing to create fashion items so when possible, this waste to be used to make new products and highlights the advantages of implementing this solution. Sustainable production can be a way of gaining a competitive advantage. This strategy can be successful by integrating the vertical value chain by strengthening the creative department, fashion design, and involvement in marketing and sales. In the clothing industry, the strategy of integrating design and retail can lead to a more flexible design process and, therefore, to an increased product performance.

Redesigning Fashion: An Analysis and Categorization of Women's Clothing Upcycling Behavior

Janigo, K.A., Wu, J., DeLong, M. 2017. Redesigning Fashion: An Analysis and Categorization of Women's Clothing Upcycling Behavior, *Fashion Practice*, 9(2), 254-279

Upcycling used clothing could transform textile waste into raw materials for new fashion items. Our research goals were to add a longitudinal element to previous research which engaged female focus group participants in a collaborative upcycling project, to further understand motivations for upcycling used clothing, and to identify common characteristics of those who choose to upcycle. Upcycling behavior of 30 women (mean age 44, 87% Caucasian) was explored through questionnaires, in-depth interviews, and visual analysis. The study also aimed to determine the conditions under which upcycling used clothes might be most successful and to further study potential for a service or business. The findings will have practical implications for those interested in fostering sustainable best practices in clothing and for entrepreneurs to weigh the pros and cons of starting a new upcycling business.
