

Kind Materials Research

Firmly placed amongst the most polluting global industries, the negative impacts of the fashion and textiles sector is high cause for concern, especially in the light of stark warnings of accelerated climate change from the recent IPCC report. The need for a new relationship with our clothes has become critical. So, what steps can we take to reduce the negative impacts of fashion?

This work, dubbed "Kind Materials Research" showcases recent work by a design research team at the Centre for Print Research, UWE. The team consists of Wallscourt Senior Research Fellow, Dr Laura Morgan and Research Associate, Rosy Heywood.

As textile design researchers, they are fueled by a desire to disrupt the systemic problems with the way we design and use textiles that contribute to a linear model of growth in the global fashion economy. Seeking kinder material systems for textiles and fashion, their recent research investigates alternatives to chemical dyeing and finishing, integrating bio-based dyeing processes with digital technology.

The Kind Materials ethos proposes that digital technology can be used in harmony with natural materials, taking a holistic view of design responsibility by considering human and animal rights and environmental stewardship.

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Bio-Digital Textile Designs

These 100% natural linen textile samples have been designed by combining a bio dyeing process and digital laser technology. Rethinking traditional textile coloration and patterning processes, the samples display the results of extensive testing to optimise alternate textile dye and patterning procedures, that adhere to sustainable and circular design strategies.

• A range of experimental bio-mordants that have been used as pre-treatments to enhance the dyeing process of natural and plant-based dyestuffs. The range of bio-mordants used were plant, fungi and algae based with advantageous properties including bio-accumulators, protein binders, tannin rich plant materials and nitrogen fixers. These ingredients would omit chemical dyes, auxiliaries and metal salts in the dyeing process that can be harmful to aquatic eco-systems and dye-house workers.

• The textiles were dyed with natural dye extracts, using small scale commercial dye machines to show the potential for industrial uptake of this process within the fashion system. All processes have been performance tested to commercial standards and shown to be suitable for mild laundering at 30^{o}C.

• The laser has been used as a digital patterning process that adds precision, and design flexibility. Laser pre-treatment has been used to modify the surface of the linen textiles and acts as a resist to dyeing. Altering the intensity of laser irradiation on the cloth results in subtle tonal differences that can be exploited creatively as a print process to add design and pattern to linen. The treatment is a dry process, that can be performed as an accurate placement print, combining design and pattern cutting in one process, or the laser designs can be applied direct-to-garment offering digital customisation showcasing the potential to be used as part of an agile local production system.

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