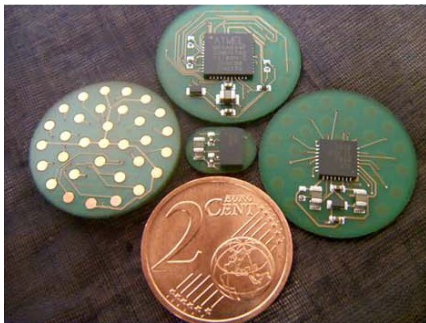
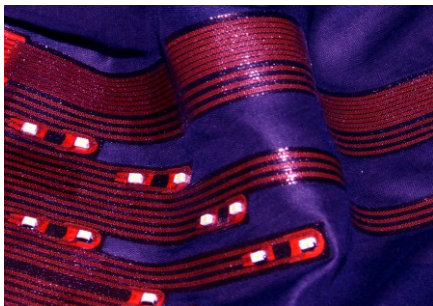


+++++++ Fashionable Technology ++++++

## Klight: Interactive Dress with SCB Technology



Electronic components on interposer boards



Laminated SCB with meander-shaped interconnections and LEDs



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### Background

Within the European integrated project STELLA, different technologies for Stretchable Circuit Boards (SCB) are currently developed. One technology, which was developed at Fraunhofer IZM and TU Berlin, uses an elastic thermoplastic foil as substrate material and meander shaped copper wires for stretchable conductors. The Stretchable Circuit Board can be used both as substrate for micro-electronic components and for the integration of the system into textiles by lamination.

Based on SCB technology they have developed an interactive dress. This fashionable prototype shows how this technology can evolve into new applications for the textile industry.

### Concept

The concept of the interactive dress is to translate the body's movement into a light pattern. The dress combines an aesthetic design with micro-electronics technology; where the technical components are hidden inside the dress.

The electronic system integrated into the dress, consists of 32 white LEDs and miniaturized interposers with QFN-package design. The different interposer boards are carrying an ATmega

644P microcontroller, two 16-channel, 12-bit PWM LED controllers and a 3-axis accelerometer. Both, the LEDs and the interposer boards are directly assembled onto the large stretchable substrate using low-temperature solder and are underfilled with an epoxy resin for improved reliability.

To assure washability and mechanical reliability of the whole system another encapsulation layer can be added on top of the electronic components.

### Realization

Design and manual construction of the interactive dress was provided by fashion design student Mareike Michel, HTW Berlin. The technical work has been done by Christian Dils, Manuel Seckel and René Vieroth.



Design of the interactive dress Klight