

BioCouture Information

The concept for BioCouture originated during the research for Suzanne Lee's book 'Fashioning The Future: tomorrow's wardrobe'. A serendipitous conversation in 2003 with Dr. David Hepworth, a biologist and materials scientist, presented a new vision of future fashion – one that emerges fully-formed from a vat of liquid.

Rather than exploit plants or petrochemicals to provide the raw material for fabric BioCouture is investigating the use of microbes to grow a textile biomaterial. Certain bacteria will spin microfibrils of pure cellulose during fermentation which form a dense layer that can be harvested and dried.

To a sugary green tea solution we add a mixed culture of bacterial cellulose, yeasts and other microorganisms to produce a flexible cellulose mat. The bacteria feed on the sugar and spin fine threads of cellulose. As these start to stick together they form a skin on the liquids surface. After two to three weeks, when it is approximately 1.5cm thick, we remove the cellulose skin from the growth bath. We can then either use it wet to mold onto a 3D form, like a dress shape, or dry it flat and then cut and sew it into a garment.

We can readily dye and print on the material and since it requires far less dye than other fibres it has a huge environmental advantage.

The material is nearest in feel to a vegetable leather and, like your vegetable peelings, it can be safely composted when you no longer want it. Left untreated the material is super-absorbent – if you went out in the rain it would turn into a heavy soggy mess! Our challenge is to explore how we can control the bacteria to produce cellulose in a desired shape, maintain flexibility, master the biodegradation and make it water-resistant or 'hydrophobic'.

With so many environmental concerns related to the production, consumption and disposal of fashion textiles BioCouture is pioneering a new eco-friendly and sustainable alternative. The future scale up of this material would also seek to use waste streams, for example from the food or drinks industry, to fuel the microbial-cellulose production.

What started as a fashion project has now evolved into a biomaterials project – we are only just beginning to imagine what other uses there might be for this material. Right now these clothes are experimental prototypes and not commercially available, and, as the material is still in development, we are unable to provide samples.

Suzanne, a newly appointed TED Fellow, lectures internationally and has run workshops in conjunction with the chemical engineering and synthetic biology departments at Imperial College London. The research is ongoing and we are particularly happy to hear from scientists working in and around this field.

BioCouture garments are currently on public display in the following exhibitions:

[**Trash Fashion: designing out waste**](#)

Antenna Gallery, The Science Museum London, until June 2011

[**The Future That Never Was: Alter Nature**](#)

ModeMuseum Hasselt, Belgium, until June 2011

BioCouture Press

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