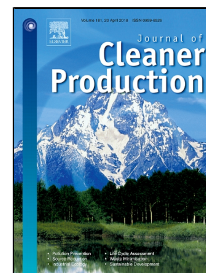


Accepted Manuscript

Fabricating materials from living organisms: an emerging design practice

Serena Camere, Elvin Karana



PII: S0959-6526(18)30738-8
DOI: 10.1016/j.jclepro.2018.03.081
Reference: JCLP 12339
To appear in: *Journal of Cleaner Production*
Received Date: 23 May 2017
Revised Date: 05 March 2018
Accepted Date: 07 March 2018

Please cite this article as: Serena Camere, Elvin Karana, Fabricating materials from living organisms: an emerging design practice, *Journal of Cleaner Production* (2018), doi: 10.1016/j.jclepro.2018.03.081

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Fabricating materials from living organisms: an emerging design practice

Authors

Serena Camere* and Elvin Karana
Department of Design Engineering,
Delft University of Technology,
Landbergstraat 15, 2628CE Delft ZH

S.Camere@tudelft.nl*

E.Karana@tudelft.nl

*corresponding author

Abstract

Biotechnology offers exciting opportunities for novel and more sustainable alternatives for the design and manufacturing of products. One of the most promising approaches is the fabrication of materials from living organisms, such as fungi and bacteria. An increasing number of designers are engaging in this "Growing Design" practice, exploring the unique potentials of the grown materials for product design. In Growing Design, designers operate in interdisciplinary contexts, engaging in early stage material developments. Despite the widespread interest towards Growing Design, no systematic study has been conducted so far to understand how this practice unfolds and its contribution to the progression towards cleaner production. To this end, eight recognized professionals in the field were interviewed. The results illustrate how the conception of materials in design evolves when designers co-perform with biological organisms. This alters how the design process unfolds and the mindset adopted in design practice, shaping a novel, systemic vision on production and consumption practices. The paper further discusses the need for developing new sensibilities to face complex interdisciplinary problems in Growing Design and highlights the role designers can take in developing new materials for sustainable production.

Highlights

- Today, designers engage in the self-fabrication of materials aiming at higher product sustainability
- The fabrication of materials through the growth of living organisms is a promising alternative to current materials production technologies
- Growing Design demonstrates the role of designers in early stage development of sustainable materials
- Growing materials from living organisms changes the way designers consider the materials and process involved in their design practice and the mindset and vision they adopt.
- Growing Design asks for augmenting new design sensibilities, redefines established design activities, and challenges settled meanings such as 'man-made' and 'natural'

Keywords

Design for Sustainability; Mycelium; Bacteria; Algae; Materials Experience; Biotechnology

1. Introduction

The role of product designers in contributing to a cleaner system of production has long been emphasized by scholars in the field of sustainability (Thackara, 2006; Manzini, 2009; Ehrenfeld, 2008; Brezet, 1997; Vezzoli, 2003). Many of the choices made during the design phase can determine the environmental impact of a new product. For example, designers can strategically choose to minimize the amount of materials involved in the product design; they can aim to design for easy disassembly and favor recycling; or to extend the product life cycle by planning its reuse and second-life (Ashby, 2012; Bocken et al., 2016; Bakker et al., 2014). Alongside these strategies, the selection of sustainable materials is regarded as central to improve the environmental performance of products (Ashby, 2012; Vezzoli, 2014; Karana, 2012; Zarandi et al.,

Download English Version:

<https://daneshyari.com/en/article/8096241>

Download Persian Version:

<https://daneshyari.com/article/8096241>

[Daneshyari.com](https://daneshyari.com)