

## Implementing 3D Printed Structures as the Newest Textile Form

**Authors :** Banu Hatice Gürcüm, Pınar Arslan, Mahmut Yalçın

**Abstract :** From the oldest production methods with yarns used to weave, knit, braid and knot to the newest production methods with fibres used to stitch, bond or structures of innovative technologies, laminates, nanoparticles, composites or 3D printing systems, textile industry advanced through materials, processes and context mostly within the last five decades. The creative momentum of fabric like 3D printed structures have come to the point of transforming as for the newest form of textile applications. Moreover, pioneering studies on the applications of 3D Printing Technology and Additive Manufacturing have been focusing on fashion and apparel sector from the last two decades beginning with fashion designers. After the advent of chain-mail like structures and flexible micro or meso structures created by SLS rapid manufacturing a more textile-like behavior is achieved. Thus, the primary aim of this paper is to discuss the most important properties of traditional fabrics that are to be expected of future fabrics. For this reason, this study deals primarily with the physical properties like softness, hand, flexibility, drapability and wearability of 3D Printed structures necessary to identify the possible ways in which it can be used instead of contemporary textile structures, namely knitted and woven fabrics. The aim of this study is to compare the physical properties of 3D printed fabrics regarding different rapid manufacturing methods (FDM and SLS). The implemented method was Material Driven Design (MDD), which comprise the use of innovative materials according to the production techniques such as 3D printing system. As a result, advanced textile processes and materials enable to the creation of new types of fabric structures and rapid solutions in the field of textiles and 3D fabrics on the other hand, are to be used in this regard.

**Keywords :** 3D printing technology, FDM, SLS, textile structure

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