

November 3, 2022

Medical devices from the 3D printer: DITF show new applications at MEDICA

The German Institutes of Textile and Fiber Research Denkendorf (DITF) will be exhibiting at the medical technology trade fair MEDICA in Düsseldorf from November 14 to 17 2022. At the joint Baden-Württemberg International Booth, the DITF will be presenting new developments in the field of 3D printing, such as for bone replacements.

In their research, the DITF also work with the Arburg Freeformer 300-3X 3D printer, which can process up to three meltable polymers of different hardness in one component. This enables hard-soft transitions, which are required, for example, in implants for body tissue replacement and in combinations with textiles. The 3D printer processes thermoplastics directly as granules without the detour via printing filaments or powders, so that even very soft or delicate materials can be processed.

One application of additive manufacturing on textiles by applying thermoplastic layers is the production of textile orthoses. Together with the Dynamic Competence Center Claudia Eisert (Mühlthal), the DITF are developing a novel foot orthosis with an integrated footbed for patients with cerebral palsy. Unlike previous orthoses made of plastic, this dynamic ankle-foot orthosis consists of a tight-fitting sock that encloses the foot and ankle joint without gaps. The corrected alignment of the foot and depth-sensory feedback enable patients to better perceive the position and movement of their own body.

At the booth, the DITF will also be demonstrating new processes for producing porous materials, such as needed for cell cultures. For this purpose, fused filaments are used in the so-called FFF process to create highly porous fine fiber fleece structures by applying additional high voltage

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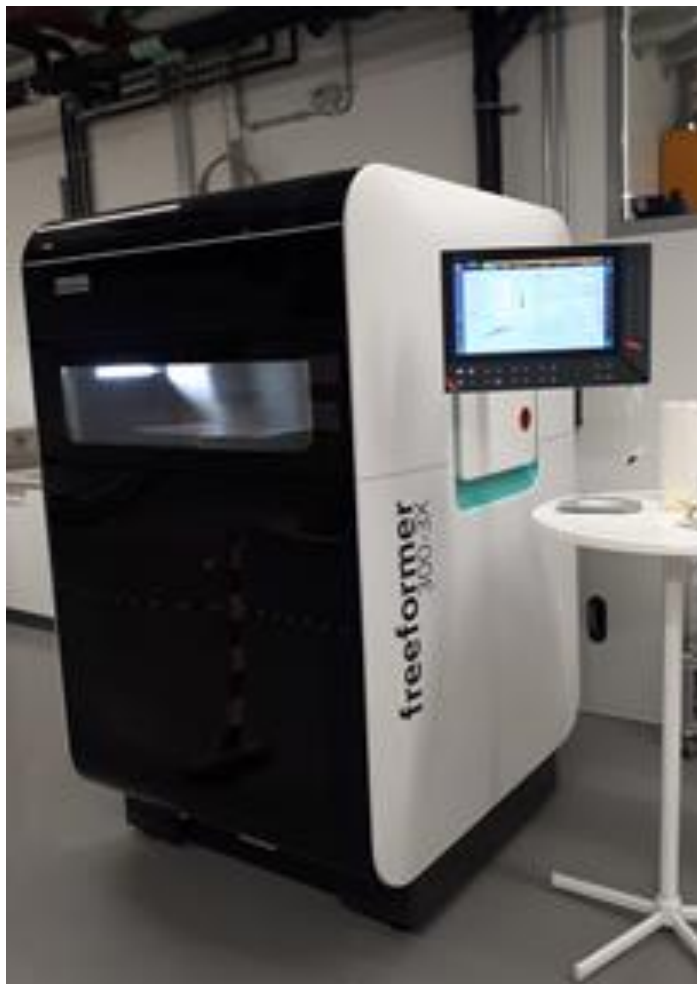
between the nozzle and the collector plate. Pores of different sizes and shapes and a variety of properties can thus be produced.

Further information: Carsten Linti

Head of Technology Center Biomedical Engineering

T +49 (0)711 93 40-365

E carsten.linti@ditf.de



Additive manufacturing directly from the granules. Photo: DITF

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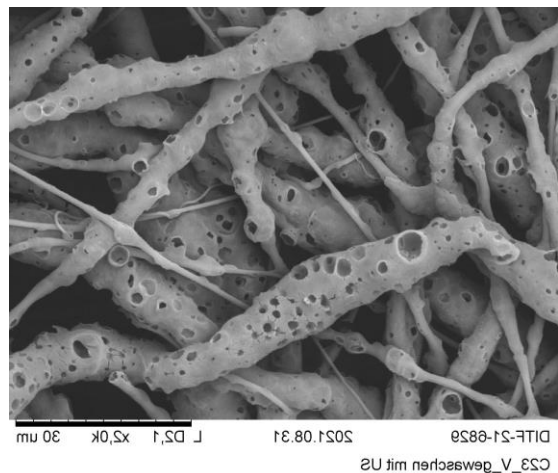
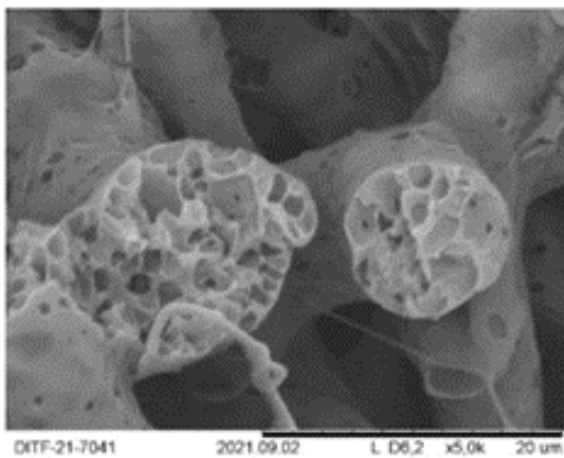
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Textile ankle-foot orthosis with footbed printed into the sock. Photo: DITF



Highly porous fibers for cell cultivation and drug delivery. Photo: DITF