

# **The Interaction of Material, Process and Form in Additive Manufactured Construction**

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## **ABSTRACT**

Additive manufacturing, also known as 3D printing, is revolutionising the construction industry by redefining design, material use and manufacturing processes. To fully exploit its potential in construction, expertise from the fields of manufacturing technology, materials science and structural engineering must be integrated. This highly interdisciplinary approach not only drives innovation, but also redefines collaborations and job profiles. This presentation examines the core principles of additive manufacturing in construction (AMC): material processing, digital control of manufacturing processes and computational design, with a focus on their dynamic interconnections.

Based on fundamental research results from the DFG-funded Collaborative Research Centre TRR 277 AMC at the Technical Universities of Braunschweig and Munich, the manufacturing of large-scale prototypes made of concrete, steel and clay will be presented, illustrating the interactions between material, process and form. By exploring the possibilities and challenges of AMC, the presentation aims to stimulate innovations that drive the construction industry in a digital and sustainable direction while promoting interdisciplinary collaboration. Practical and theoretical insights will be used to highlight the transformative role of AMC in educating the next generation of architects and civil engineers.