How 3D printing with biomaterials can minimize our carbon footprint and revolutionize the world

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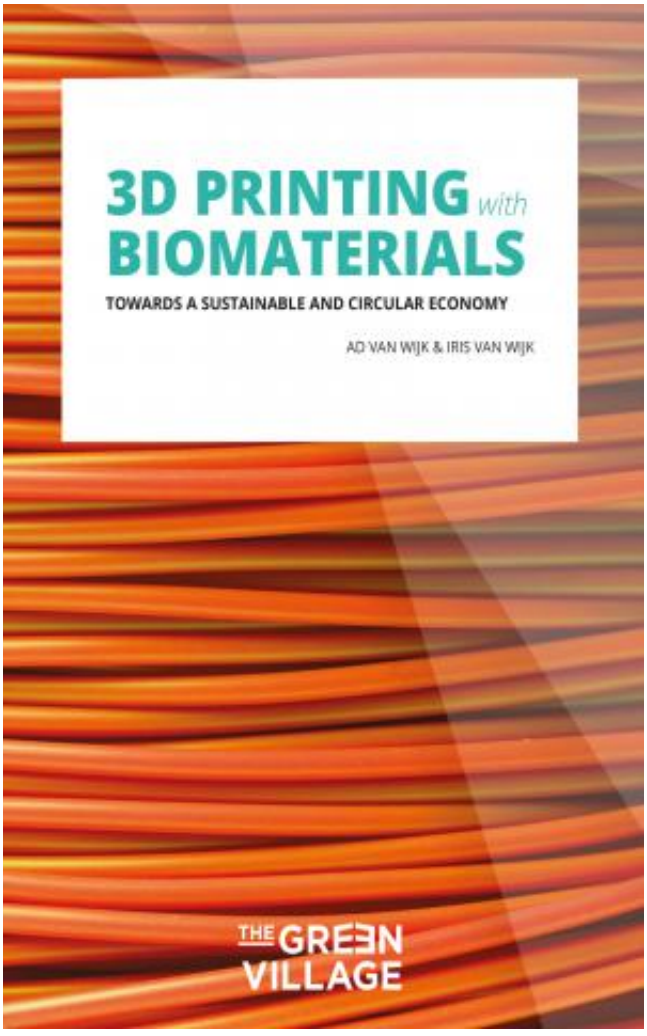

How can 3D Printing revolutionize the world? In the newly published book '3D Printing with Biomaterials', authors Ad van Wijk and Iris van Wijk explore the promises of 3D printing with biomaterials towards a sustainable and circular economy. This is illustrated by a remarkable example: the printing of an entire town house from bio-based plastics, made from sugar beets. The resulting carbon footprint for material is reduced by more than 60%.

Prof. Dr. Ad van Wijk says: "Truly sustainable and circular products can be realized by 3D printing with biomaterials, and we are determined to explore the synergistic effect of this revolutionizing technology combined with biomaterials."

The book describes two paradigm shifts that will revolutionize the economy: 3D printing and biomaterials. The first shift holds the promise to manufacture on demand, locally and with less waste and energy. It may use a wide range of material types such as metals, ceramics, sand, synthetic materials such as plastics, and even food or living cells. The second shift is that synthetic materials, such as plastics, can be made of different types of biomass such as maize, sugar beets or even organic waste. These biomaterials can almost completely substitute fossil-based plastics. "The material cycle can be closed by feeding the printer with filament based on biomaterials, such as bio-based plastics. By doing so, we contribute to a sustainable and circular economy," explains Iris van Wijk.

The research is done in The Green Village, in cooperation with Amsterdam University of Applied Sciences (HvA). The Green Village (www.thegreenvillage.org) is developing on the campus of the Delft University of Technology in the Netherlands, and brings scientists, students and enterprises together to create a sustainable and lively environment where innovative solutions for today's urgent challenges can be found. The Amsterdam University of Applied Sciences (HvA) studies

the application of bio-based plastics in high-value products in the research program Urban Technology.

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