

News Release

LANXESS pigments color 3D-printed concrete sculpture at Venice Architecture Biennale

- **New design options through colored iron oxide pigments in 3D concrete printing**
- **Artwork “Duality of Skin and Core” sets new standards for sustainable construction and circular design principles**

Mumbai, July 14, 2025 – Inorganic pigments from LANXESS are opening up new design possibilities in 3D concrete printing. A current example is the concrete sculpture “Duality of Skin and Core,” which was designed using red and black iron oxide pigments. It is currently on display in the “Time. Space. Existence.” exhibition at the Venice Architecture Biennale. Assistant Professor Cristina Nan and architect Mattia Zucco from the Department of the Built Environment at Eindhoven University of Technology developed the concrete sculpture as an architectural experiment. The modular column was realized in collaboration with LANXESS and Dutch 3D printing specialist Vertico.

The project shows how color, computer-generated patterns, and material performance can be integrated into digitally controlled manufacturing processes. This opens up new aesthetic and constructive approaches for the architecture of tomorrow.

Innovative design and materiality in 3D concrete printing

“Duality of Skin and Core” reinterprets the classic architectural column. A slit-like opening in the cladding reveals the colored interior – hence the name. Until now, a monolithic, gray aesthetic has dominated comparable applications. The innovative design and manufacturing strategy significantly expands the possibilities of 3D printing with concrete. Instead of printing components in a single pass, the project pursues a modular strategy. Inspired by ancient Greek and Roman columns, the artwork consists of nine drums and four wings. Each individual element weighs less than 30 kilograms. This principle facilitates transport, enables flexible assembly, disassembly, and reuse, and thus extends the life cycle of the components – an important contribution to sustainable construction and circular design principles.

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LANXESS as a driver of innovation in 3D concrete printing

In order to secure the potential of colored concrete in 3D printing, not only in terms of design but also in terms of technology, LANXESS is conducting research into the properties of its pigments under additive manufacturing conditions in collaboration with partners such as the Institute of Construction Materials at the Technical University of Dresden. As part of joint investigations, the partners have analyzed how Bayferrox and Colortherm pigments behave in 3D concrete printing. The results show that the pigments do not affect the concrete properties and at the same time enable high color quality and consistency. They can therefore be used without restriction for the individual coloring of the up to now mostly gray material in 3D printing.

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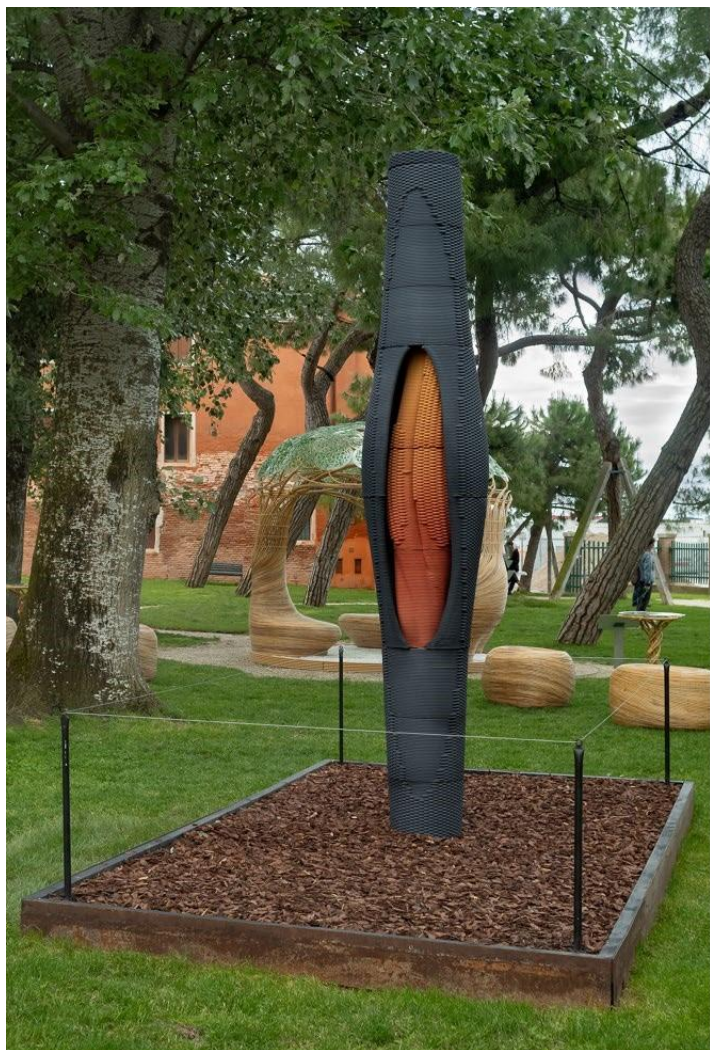
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Image:



The “Duality of Skin and Core” column is an experimental architectural proto-structure currently on display at the Venice Architecture Biennale 2025. Pigments from LANXESS were used for the colored design of the concrete. They ensure consistently high color quality and consistency and can be used without restriction in 3D concrete printing.

Photo: Sukgyo Lloyd Lee

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LANXESS is a leading specialty chemicals company with sales of EUR 6.4 billion in 2024. The company currently has about 12,000 employees in 32 countries. The core business of LANXESS is the development, manufacturing and marketing of chemical intermediates, additives and consumer protection products. LANXESS has achieved leading positions in the Dow Jones Best-in-Class Index and the MSCI ESG and ISS ESG ratings, among others, for its commitment to sustainability.

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