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BIOMAT: MODULAR SUSTAINABLE ARCHITECTURE

Posted on November 16, 2022 by xavigonzalez

Categories: Contributors, Densities, Designing Matter, Formats, ITKE, No Density, Project, Technology and fabrication, Topics

Tags: Biomaterial, Computation, Digital fabrication, Experimental, Geometry, Lightweight Materials, Modular Design, Optimized construction, Parametric design, Project, Prototype, Research, Simulation, Structure, Sustainable

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The Mock-up demonstrates a vision for modular sustainable architecture, where annually renewable biomaterials are digitally additively fabricated to produce minimal surface modular units, which are versatile and reusable in diverse geometric constellations.

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The Mock-up is 2 m high, consists of 14 modules and weighs only 20 kg. The identical modules were assembled into different foam-like lightweight compositions. The modules were fabricated by digitally tailoring natural flax fibers into specific 2D patterns following optimized structural and parametric geometrical deviations. These were later formed using a vacuum-assisted molding process into the final 3D shapes.

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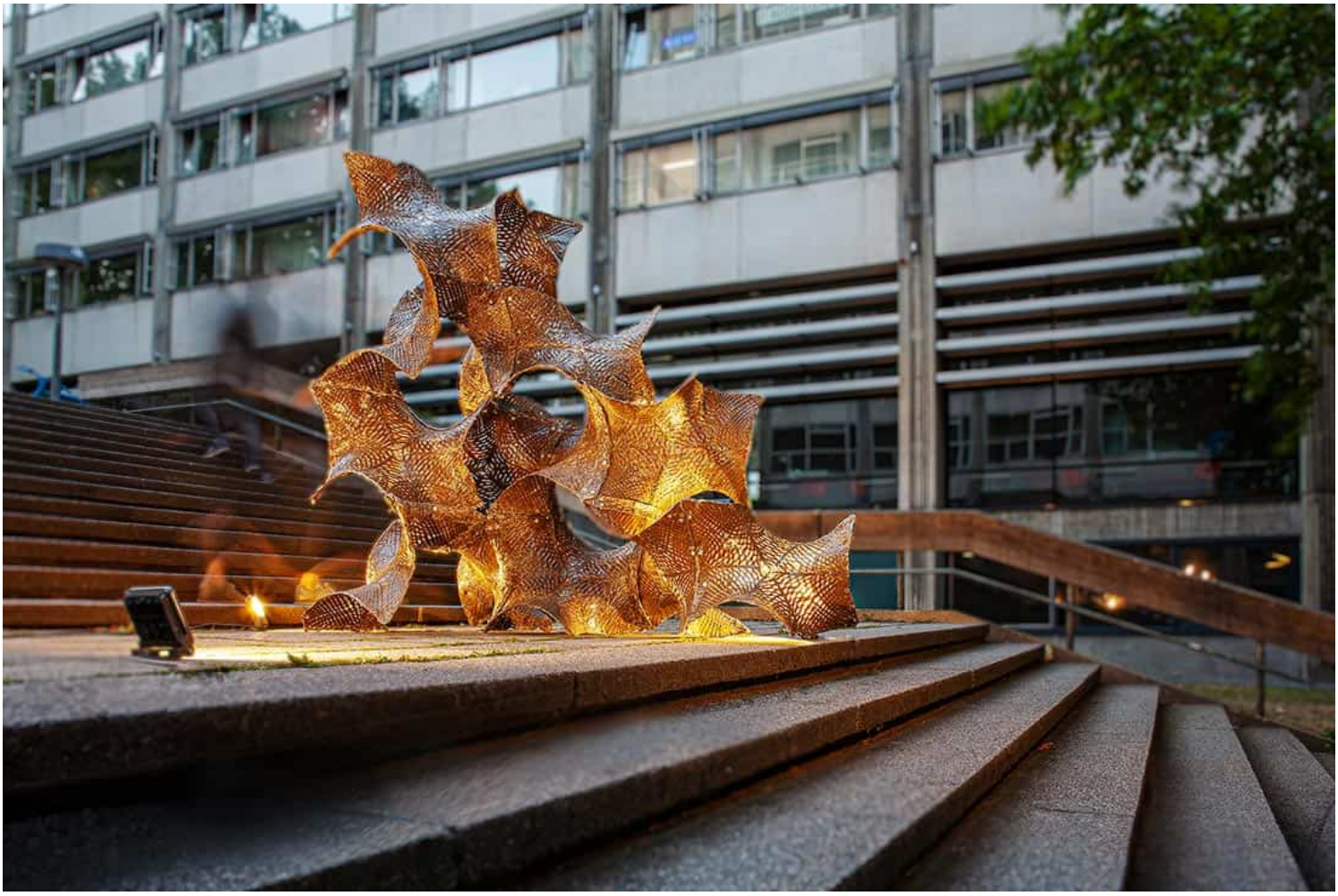

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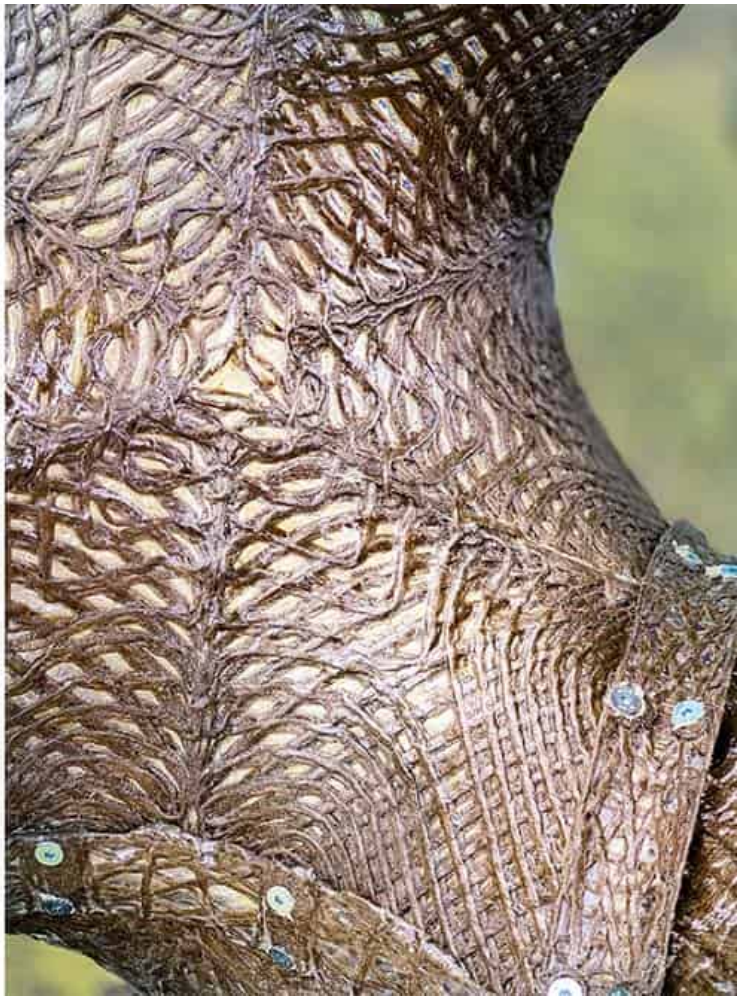

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This project is a result of three months of intensive work including computational architectural design, structural simulations, and optimizations as well as the digital fabrication phases.

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