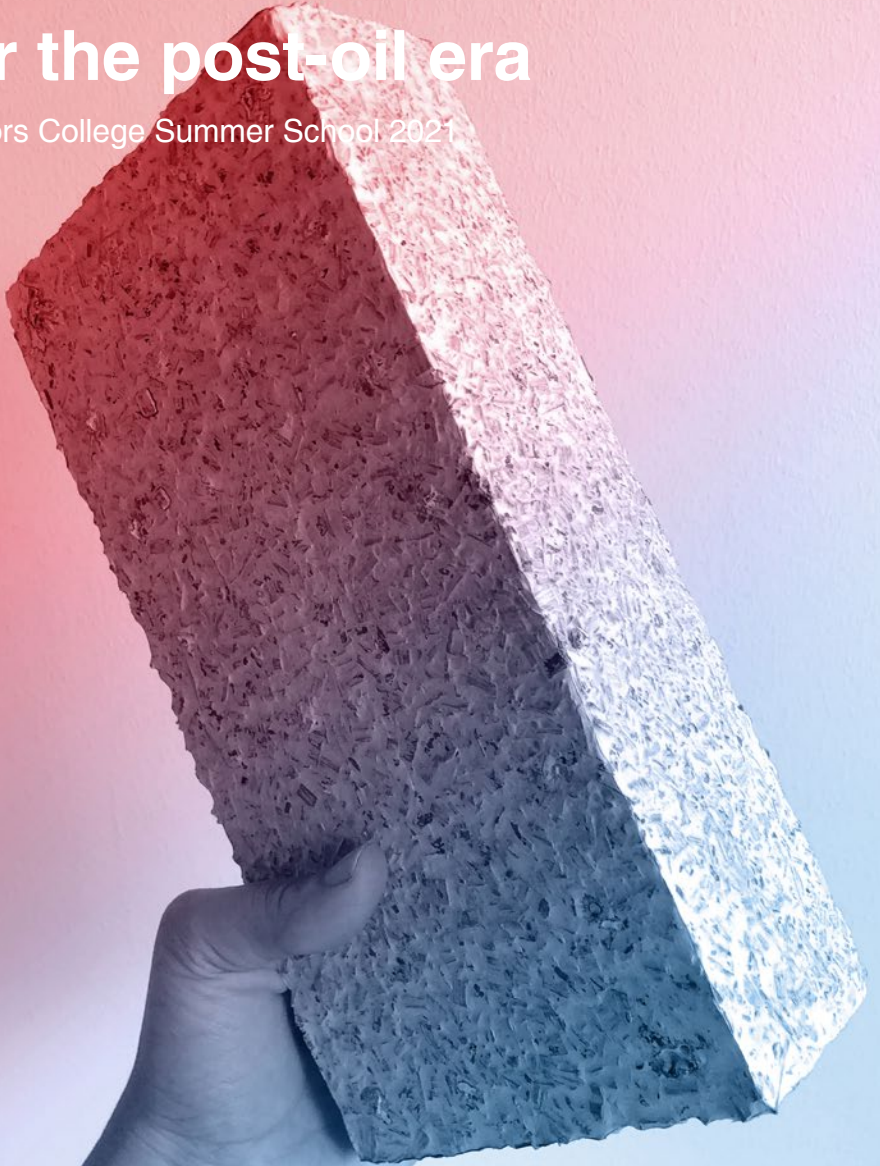


Structural materials for the post-oil era

Honors College Summer School 2021



20.09. - 01.10.2021



Scope

Topic Description and Motivation

According to the DGNB (German Sustainable Building Council), the construction industry is responsible for: 30% of global CO₂ emissions, 40% of energy consumption in Europe, and 30% of resource consumption worldwide. Furthermore, 80-90% of these resources are used in buildings' load-bearing structures. That is why we, as architects and engineers, can reduce this impact by applying our know-how in smart designs. These solutions should not only apply to mass-reduction optimization but also materials' smart selection.

This Summer School aims to introduce the current state of research in building materials, how they can be implemented in structural systems, and possible optimization strategies. The program introduces fundamental theoretical knowledge in renewable materials' statics and evaluation techniques, complemented by 'Hands-on workshops,' where students apply their acquired knowledge in practical projects.

The course is conducted by the Chair for Structures and Structural Design (Trako), led by Univ.-Prof. Dr.-Ing. Martin Trautz at the Faculty of Architecture of RWTH Aachen. Trako is an international and interdisciplinary group of young Structural Engineers and Architects. Its research focuses on lightweight structures, traditional natural materials as wood, vernacular natural materials as bamboo, and experimental bio-materials like the Mycelium-based. In this context, they also invited experts in related fields worldwide to extend the subjects of knowledge by allowing broader exchange and debate.

This program is specially tailored for undergraduate students from the Honors College. The Honors College is an initiative from the excellent academic education strategy at RWTH Aachen. It seeks to shape promising students into top international researchers by training them in responsible research and innovation (RRI), interdisciplinary research projects, and professional expertise. Due to the international nature of the event, all courses are going to be guided in English.

[Structural materials for the post-oil era](#)
[Honors College Summer School 2021](#)

All talks will be live streamed via Youtube through the following link: <https://youtu.be/WSkuGhowNOW>

The talks are no going to be recorded.

All official participants of the event will receive the corresponding Zoom-Links to access this educational event.

Program

1st week

	Date	Time	Topic	
01	20.09.2021	9:00 - 10:15	Form Follows Fysics-reinventing the built environment Ronald Rovers - RiBuiIT, NL Q&A	*
		10:45 - 12:00	Bioplastics basics + Hands-on tutorial Dana Saez - Trako, RWTH Aachen, DE Q&A	
02	21.09.2021	9:00 - 10:15	Natural Materials: organic and inorganic Dana Saez - Trako, RWTH Aachen, DE Q&A	*
		10:45 - 12:00	Building Materials from Secondary Resources Linda Hildebrand - rb, RWTH Aachen, DE Q&A	*
03	22.09.2021	9:00 - 10:15	Lightweight structures: Learning from nature Martin Trautz - Trako, RWTH Aachen, DE Q&A	*
		10:45 - 12:00	Guided Growth Kevin Moreno Gata - Trako, RWTH Aachen, DE Q&A	*
04	23.09.2021	9:00 - 10:15	Inorganic Materials: Earth construction Alex Seiter - Trako, RWTH Aachen, DE Q&A	*
		10:45 - 12:00	New perspectives for earth construction Radwa Rostom - Handover Projects, EG	*
05	25.09.2021	9:00 - 10:15	Organic Materials: Wood Martin Trautz - Trako, RWTH Aachen, DE Q&A	*
		10:45 - 12:00	Incremental sheet forming Thorsten Pofahl - Trako, RWTH Aachen, DE Q&A	*
Live streaming via YouTube, find the link on page 02				*

2nd week

	Date	Time	Topic	
06	27.09.2021	9:00 - 10:15	First Review Student Presentations on the Hands-on Q&A	
		10:45 - 12:00	Material characterization - part 1 Denis Grizmann - Trako, RWTH Aachen, DE Q&A	*
07	28.09.2021	9:00 - 10:15	Material characterization - part 2 Denis Grizmann - Trako, RWTH Aachen, DE Q&A	*
		10:45 - 12:00	Material Characterization: Innovative Methods Cynthia Morales Gruz - Ibac, RWTH Aachen, DE Q&A	*
08	29.09.2021	9:00 - 10:15	Wood: Reinforcement - a brief insight in research Andrija Pranjic- Trako, RWTH Aachen, DE Q&A	*
		10:45 - 12:00	Di-terial – Sensory informed Design-to-Fabrication processes for the sustainable use of natural grown construction resources. Felix Amtsberg - ICD, University of Stuttgart, DE	*
09	30.09.2021	9:00 - 10:15	Re-thinking on Bamboo: From Vernacular to Contemporary Architecture Andry Widyowijatnoko - Institut Teknologi Bandung, ID	*
		10:45 - 12:00	Experimental Materials: Mycelium Dana Saez - Trako, RWTH Aachen, DE Q&A	*
10	01.10.2021	9:00 - 10:15	Lightweight structures: graded concrete David Nigl - ILEK, University of Stuttgart, DE Q&A	*
		10:45 - 12:00	Recyclable constructions: the recycling potential of building materials Petra Riegler-Floors Trier University of applied sciences, DE	*
11	08.10.2021	9:00 - 12:00	Final Review	

Chair of Structures & Structural Design

Univ.-Prof. Dr.-Ing. Martin Trautz
trautz@trako.arch.rwth-aachen.de

Coordination: M. Sc. Dana Saez
saez@trako.arch.rwth-aachen.de

Schinkelstraße 1, 52062 Aachen
Tel.: +49 241 80 95 004
Fax.: +49 241 80 92 205

trako.arch.rwth-aachen.de

Thinking the Future
Zukunft denken