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BRUSSELS,BELGIUM | 03.07.2019

WHAT KIND OF BUILT ENVIRONMENT FOR FUTURE GENERATIONS?

The perspectives of industry oriented university research: 3D concrete printing by selective deposition

Viktor Mechtcherine, Christof Schröfl, Venkatesh Nerella, Viacheslav Markin
Technische Universität Dresden

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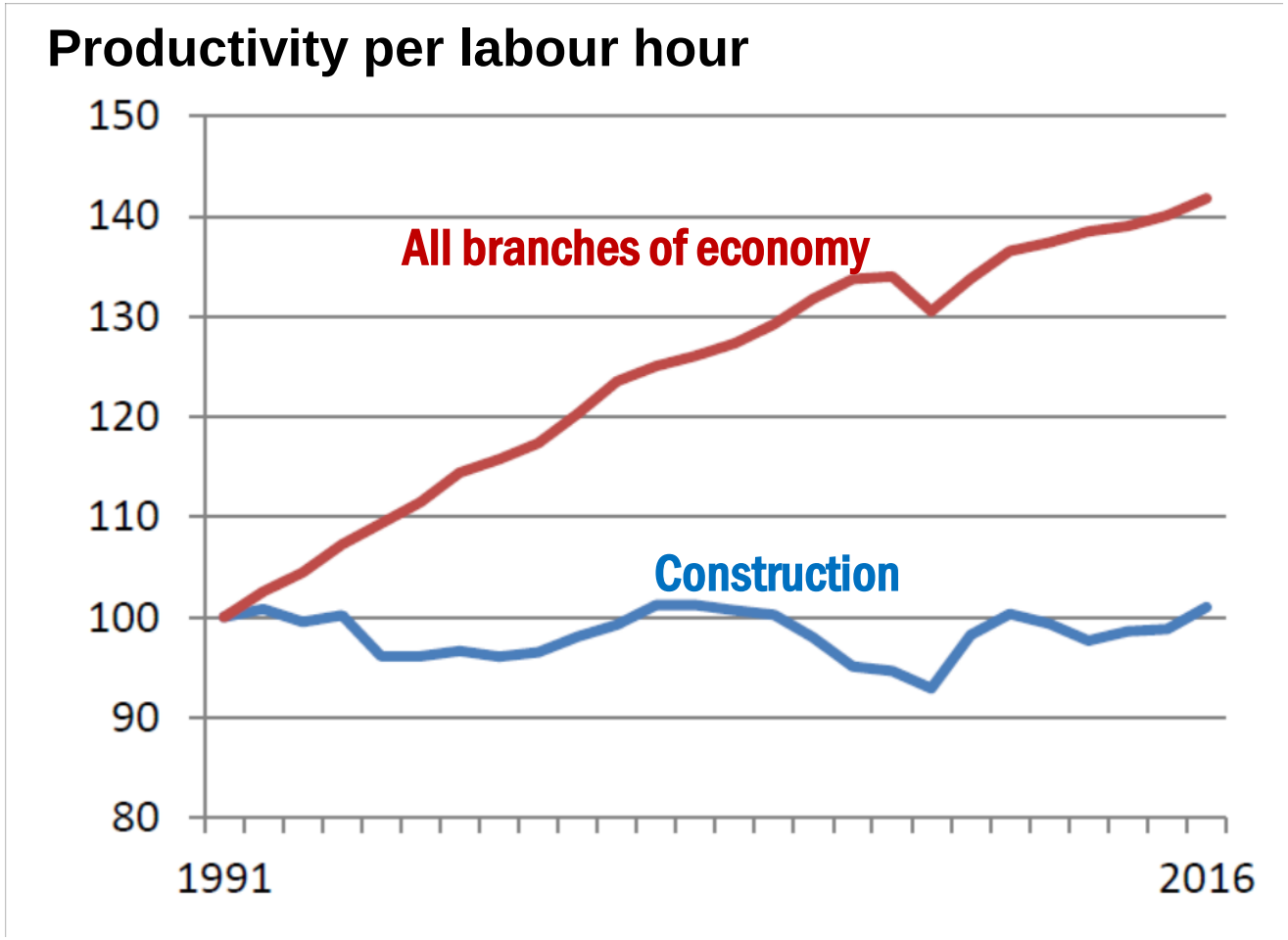
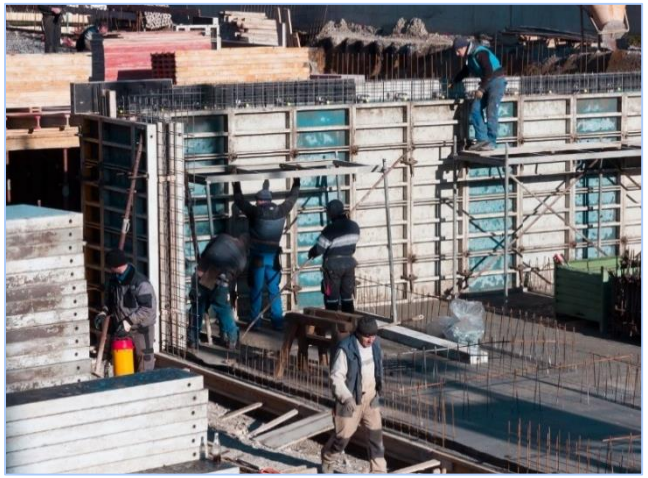
The projects have received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 760639 (EnDurCrete), 760824 (ReSHEALience) and 761072 (DACOMAT)

Increase the competitiveness of construction industry ...





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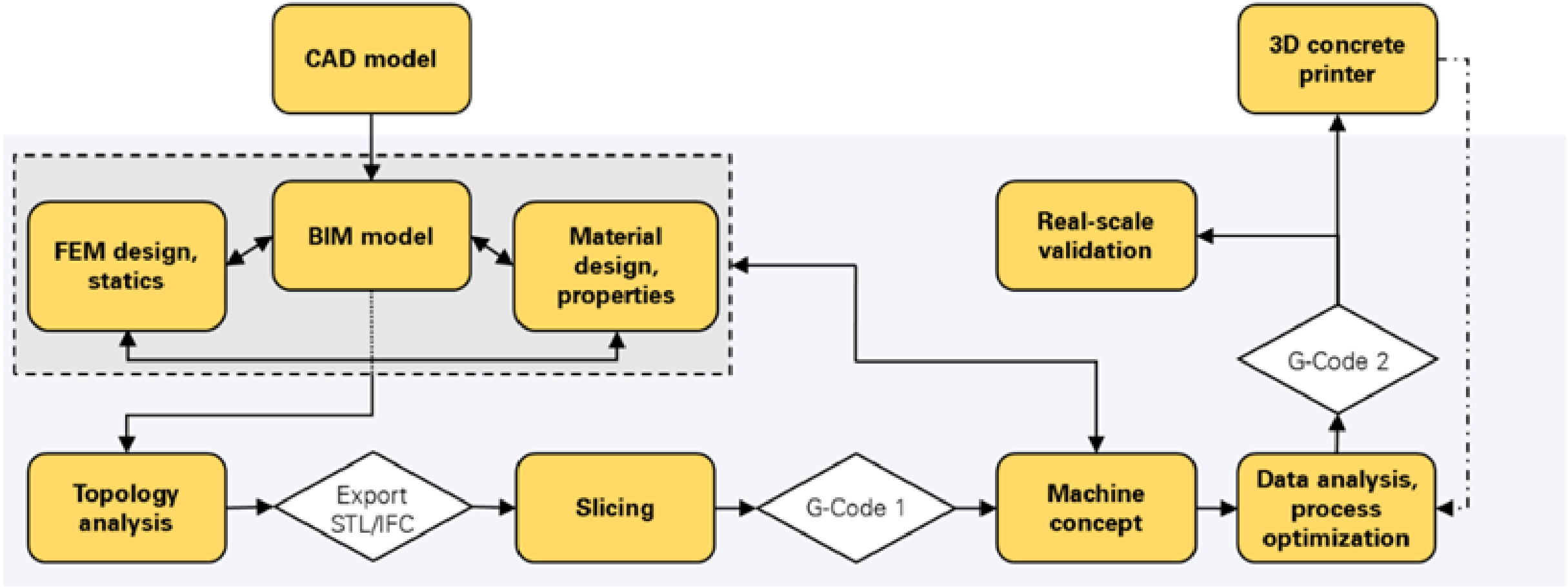
... and implement KETs for new materials



Mechtcherine, Nerella, *Bautechnik* 95 (2018) 275-287

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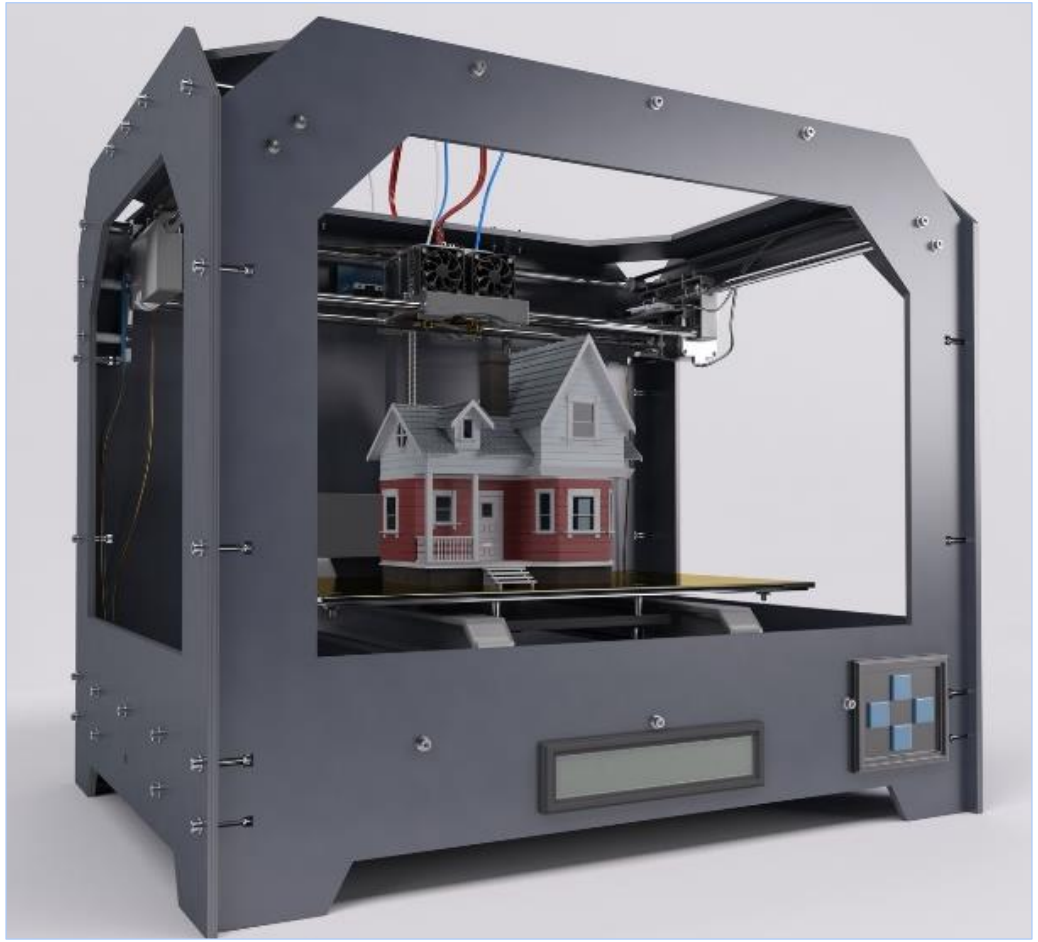
How can we go from lab to future built environment?



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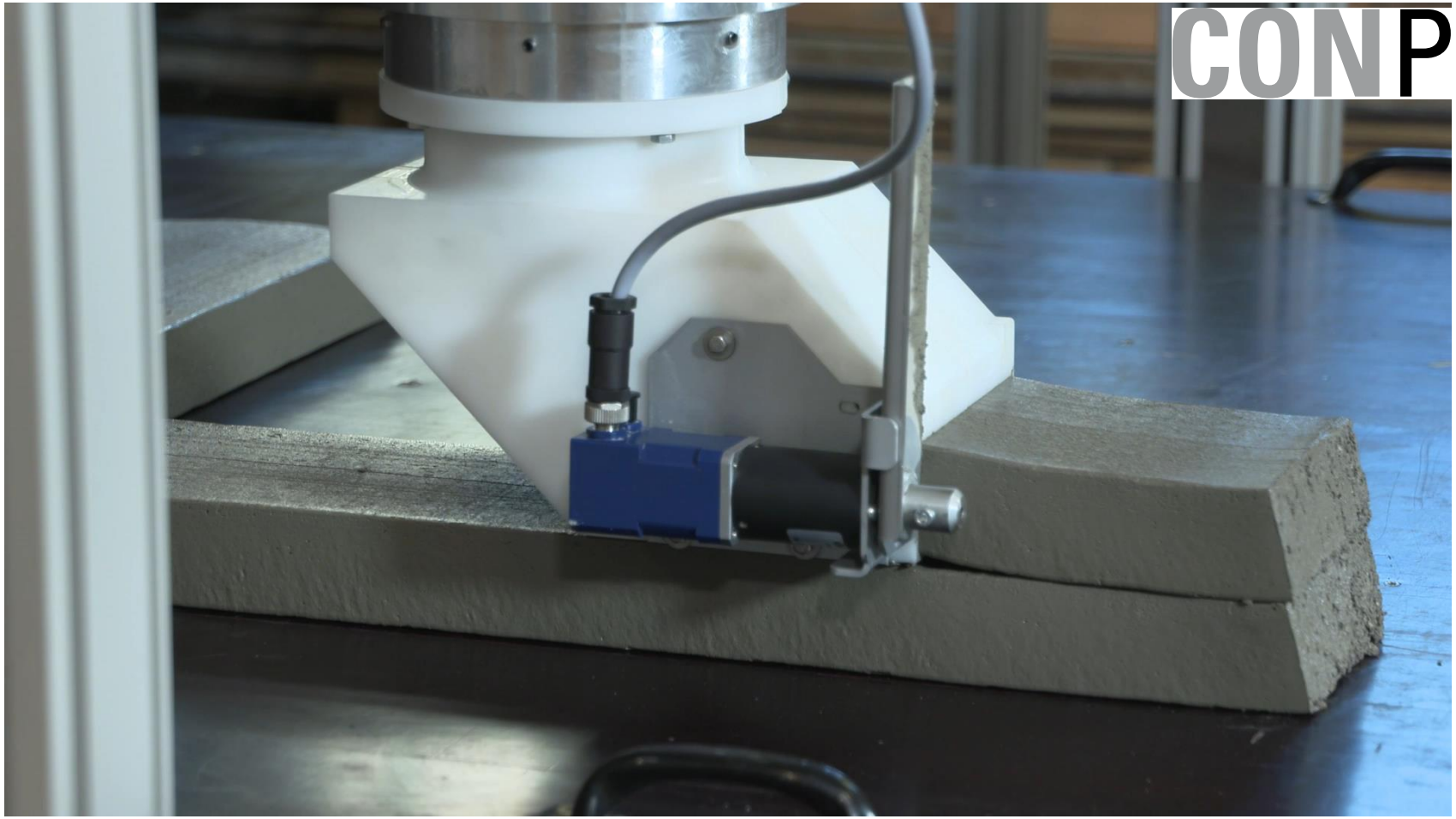

CONPrint3D

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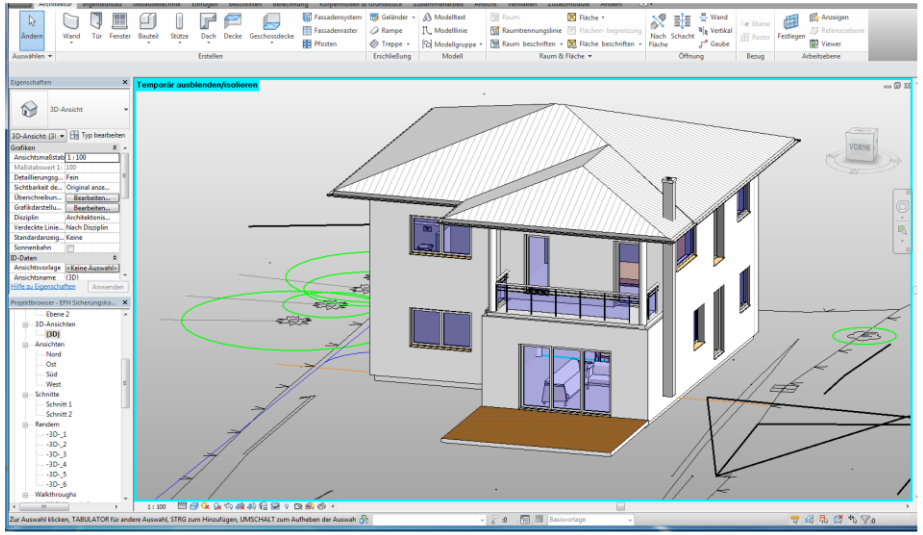

WINNER OF THE: bauma Innovation Award 2016

- **Start from today's architectural and structural design (sharp corners, straight geometries, massive cross-sections) and move to non conventional ones**
- **Maximum use of common construction machinery**
- **Start from concrete compositions and properties in the framework of existing concrete codes to move towards UHDCs (see 3D printing as a KET for advanced materials and structure concepts)**
- **Printhead which enables usual surface qualities and precision tolerances according to existing standards**

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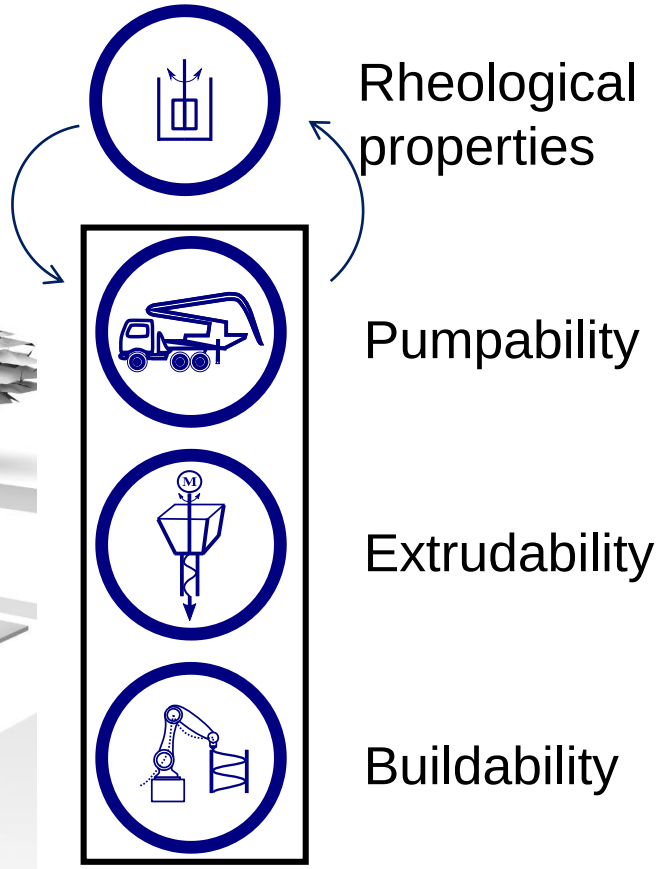

Process innovation as a driver to product and concept innovation

Hardened-state properties

→ **Mechanics**

→ **Durability**

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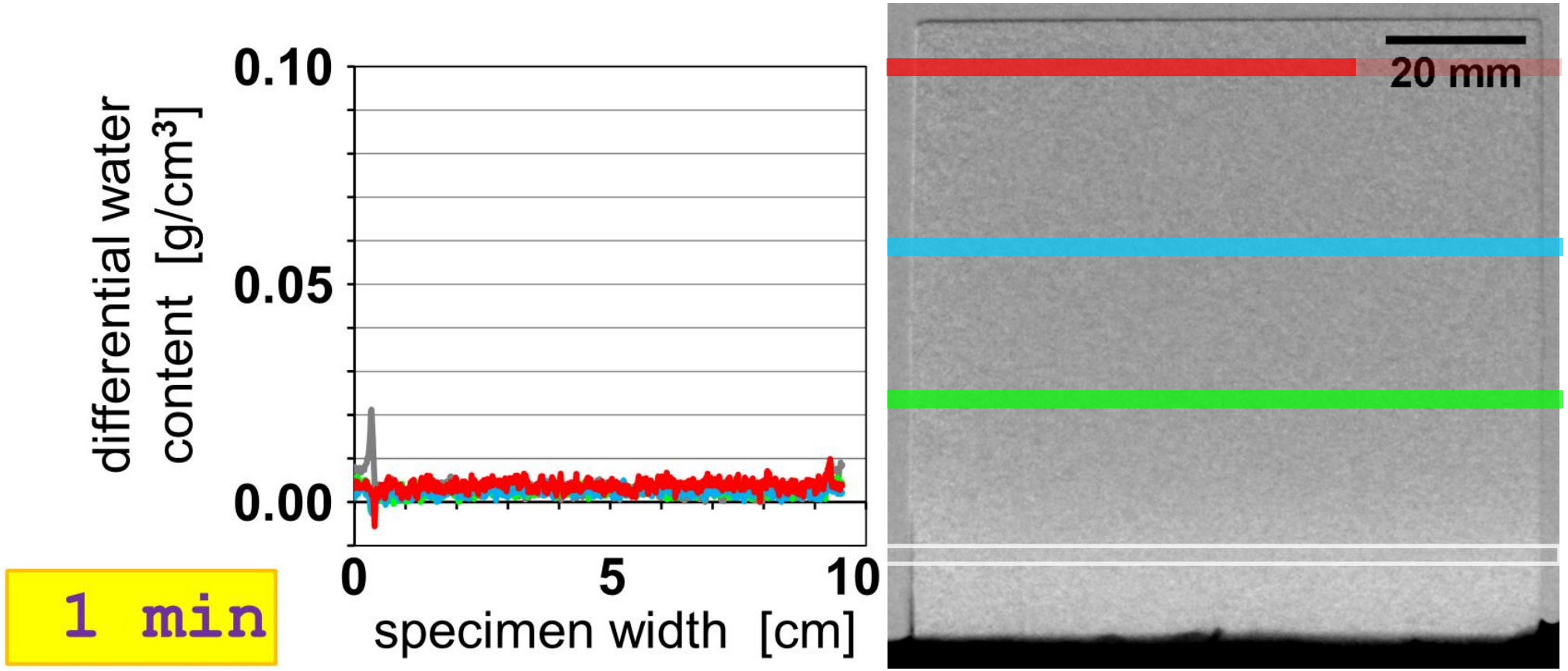
Capillary water suction of 3D printed fine-grained concrete visualised and quantified by neutron radiography (PSI)



Schröfl, Nerella, Mechtcherine, *DC 2018,* RILEM Bookseries 19 (2019), 217-224, DOI: 10.1007/978-3-319-99519-9_20

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Acknowledgements

Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit

Bundesministerium für Ernährung und Landwirtschaft

FORSCHUNGSINITIATIVE ZukunftBAU

FNR Fachagentur Nachwachsende Rohstoffe e.V.

DFG Deutsche Forschungsgemeinschaft

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Invitation to Dresden, September 8-11, 2019

2nd International Conference on Rheology in Concrete Construction

9th International RILEM Symposium on Self-Compacting Concrete

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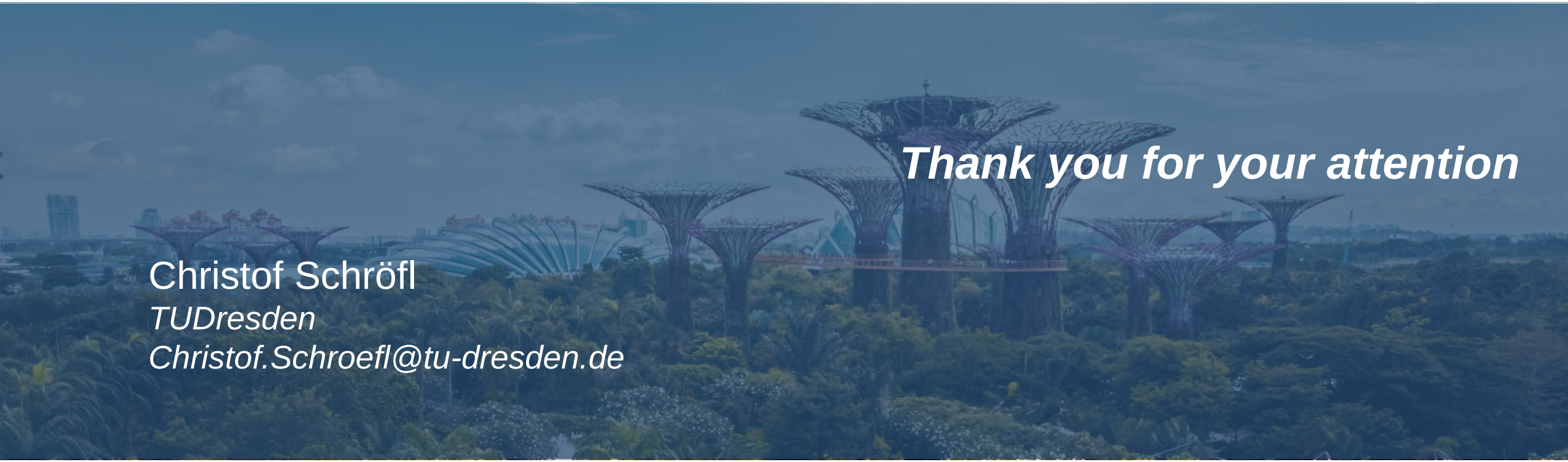

Thank you for your attention

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