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Department of Civil and Environmental Engineering

## **3D printing of limestone-calcined clay-based cementitious materials**

by

**Dr. Yu CHEN**

**Post-doc, Faculty of Civil Engineering,  
TU Delft (the Netherlands)**

**Host: Dr. Du Hongjian**

**Date: 24 July 2023, Monday**  
**Time: 2 pm – 3 pm**  
**Venue: E1A-06-21 ISE Confernece Room**

### **Abstract**

Extrusion-based 3D concrete printing (3DCP) is gaining significant attention from academia and industry due to its advantages in concrete construction. These benefits include enhanced architectural design freedom, elimination of formwork, optimized material usage, and reduced waste, labor, and costs. However, the sustainable advantages of 3DCP can be compromised due to the high content of ordinary Portland cement (PC) in most 3D printable cementitious materials. Efforts have been made to develop sustainable alternatives, such as using common supplementary cementitious materials (SCMs) like fly ash, silica fume, and slag. However, these SCMs, being industrial by-products, are depleting over time. For long-term development, limestone and calcined clay are promising alternatives to SCMs, thanks to their widespread availability and low CO<sub>2</sub> footprint in material production. This presentation will provide recent studies on the rheology and interlayer bonding of 3D printed cementitious materials containing limestone and calcined clay.

### **Speaker's Biography**



Yu Chen is a postdoctoral researcher in 3D concrete printing at Microlab, Faculty of Civil Engineering, TU Delft (the Netherlands) since October 2021. He obtained his Ph.D. from the group of Prof. Erik Schlangen (Microlab, TU Delft) in July 2021. He has published more than 20 papers related to 3D concrete printing, rheology, LC3, microstructure characterization, mechanical testing, very early-age hydration, etc.

**Enquiry: Dr. Du Hongjian**  
**Email: [ceedhj@nus.edu.sg](mailto:ceedhj@nus.edu.sg)**