

**Research in the area of
Solid Structures
at the University of Luxembourg**
Ass.-Prof. Dr.-Ing. Danièle Waldmann-Diederich

Reinforced and prestressed concrete structures
“Structures en béton armé et précontraint”

Research group: 2 PostDocs and 6 PhD students



Main research subjects

- Smart buildings
- Smart structures
- Demountable structures
- Circular economy

aligned with the strategy of the Institute of Civil and Environmental Engineering.

Strategy of Laboratory of Solid Structures

- **Visibility** towards the “outside world”
- **Integration of UL** into Luxembourg
- **Reference point** for industry, engineering consultancies and administrations

New innovative concrete formulation

Substitution of **cement** and **traditional aggregates** by **waste** or **renewable** products aiming at a

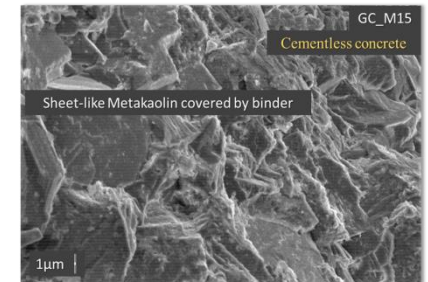
- reduction of energy consumption
- reduction of consumption of natural resources and a
- reduction of CO₂ production

Structural analysis of concrete structures

Analytical, numerical and **experimental** analysis of **reinforced concrete** or **prestressed concrete** structures

Computational modelling for concrete

Multi-Physics Numerical Simulation of the **chemical, mechanical and thermal** material behaviour of concrete



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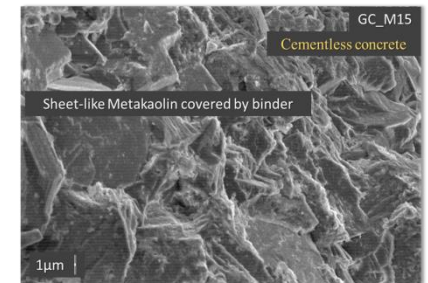
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New innovative concrete formulation

Miscanthus x giganteus



Miscanthus giganteus concrete formulations Dias & Waldmann (2016-2020)



M. Sc. Eng. Patrick Pereira Dias
Prof. Dr.-Ing. Danièle Waldmann

