

## **Doctoral (PhD) full time position in Non-destructive Testing of Innovative Structural Composites (Textile Reinforced Cements) in Vrije Universiteit Brussels, Belgium.**

Applications are invited for PhD research under the title “Unravelling Textile Reinforced Cementitious composites by means of multi-modal sensing techniques”.

A summary of the project is found below:

The project aims at the development of a novel procedure for quality control of modern civil engineering components based on the under exploited millimeter wave electromagnetic methods (MMW). It involves textile reinforced cementitious (TRC) composites which are increasingly used in industry for reasons of weight and sustainability. These modern systems though, exhibit an extremely complex mechanical and fracture behavior and need status verification in the different stages of their service life: at manufacturing stage (curing), final product quality (manufacturing defects), deterioration during use (damage accumulation). Since reliable monitoring is required to examine the material performance the project introduces advanced contact-free MMW applicable as a novel universal non-destructive evaluation methodology at various stages of the life cycle of TRC composites. In addition, it combines several inspection techniques based on elastic waves (acoustic emission and ultrasound), optical measurements (digital image correlation) and infrared imaging that collect information from a global perspective. The project wishes to challenge the limits of monitoring in all stages of the components life and provide a multi-physics signal interpretation based on the vast and largely unexplored capacities of MMW for TRC evaluation and the benchmarking offered by techniques more established in the field. The project will give feedback on the optimal curing conditions, prediction of failure mode as well as the design of the geometry.

The project is funded by FWO (Fonds Wetenschappelijk Onderzoek-Vlaanderen, Research Foundation-Flanders) and will last four (4) years. The post will preferably start not later than September 2019.

Skills and personal qualities:

Applicants should have a master’s degree (or equivalent) in Engineering, Physics or related studies. An independent and well-organized working style, demanding high quality of your own work. Well-developed social skills directed towards working in an interdisciplinary team, excellent interpersonal and communicative skills. Strong motivation to succeed in scientific research, excellent presentation and scientific writing skills, excellent English language skills (verbally and written).

An application must contain the following documents in English: a personal (motivation) letter and curriculum vitae, a copy of degree certificates and associated certificates, a copy of degree projects and any previous publications and proof of English language skills.

The documents should be sent to [daggelis@vub.be](mailto:daggelis@vub.be) and [jstiens@etrovub.be](mailto:jstiens@etrovub.be)

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