

Full time Doctoral (PhD) position in Population Balance Modelling (PBM) of cement particle agglomeration

Summary of the project:

Since several decades, the introduction of superplasticizers in concrete has been beneficial from many points of view. The main contribution of these chemical admixtures comprises the readily improved workability of any cementitious material in construction industry. However, the beneficial effect of these comb-like polymers should be considered in relation to their relatively high costs. Despite their growing deployment, the use of superplasticizers for the improvement of concrete workability has also exposed a gap in the control of concrete rheology, related to cement particle agglomeration. Therefore, this research project aims at **understanding the fundamental mechanisms behind concrete rheology during the transient state** and it will focus particularly on **the agglomeration behavior of cement particles by means of population balance modelling and experimental validation**. In the end, this would provide the concrete technologists with reliable engineering tools to design much more efficiently in function of the customer rheology demands.

The project is funded by FWO (Fonds Wetenschappelijk Onderzoek-Vlaanderen, Research Foundation-Flanders) and has a duration of three (3) years. The post will start at the latest in January 2018.

Skills and personal qualities:

Applicants should have a master's degree (or equivalent) in (Bio-science)Engineering, Chemistry, 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). Knowledge of the Dutch language is appreciated.

Applications should be submitted as one single pdf-document containing the following 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, a proof of English language skills (e.g. TOEFL, IELTS, ...).

The documents should be sent **no later than July 15** to both

Prof. Ingmar Nopens (Ingmar.Nopens@UGent.be), Dept. Of Mathematical Modelling, Statistics and Bioinformatics, UGent

dr. Karel Lesage (Karel.Lesage@UGent.be), Magnel Laboratory for Concrete Research, UGent