Supervisors
Dr Ana Blanco

Project title
Self-healing technologies in cementitious composites: novel approaches and application to 3DCP

Project description
This project proposes a novel approach to self-healing cementitious composites by utilising 3D printing technology for selective deposition of self-healing agents in a superficial layer tailored to the likelihood and degree of cracking. This strategy aims to optimise material usage and cost-effectiveness while extending the service life of concrete structures. The student will gain hands-on experience with experimental testing, 3D printers and data analysis techniques. The tasks include (1) a revision of the literature on self-healing technologies & approaches, (2) an experimental program on cast samples (i.e. water permeability and rapid chloride migration test), (3) operation of a small robotic arm and pumping system to 3D print self-healing mortar, and (4) creating guidance for the operation of the 3D printer. The outcomes of this work will contribute to fundamental knowledge in cementitious composites and 3D concrete printing, offering potential for further investigation in a dissertation.