



**Title :** Post-Doctorate position 12-24 months (Toulouse-France)/ Reactivity of Ground Granulated Blast Furnace Slag (glass) in cement-based materials.

**Institution :** Laboratoire Matériaux et Durabilité des Constructions (LMDC) / Université Paul Sabatier-Toulouse / INSA Toulouse

**Starting date :** Winter 2019 (January-February-March)

### **Project**

The **ACTISLAG project** is a 4-year European project with 6 academic and industrial partners (France, Germany, Ireland) supported by the **European Fund for Coal and Steel (RFCS)**. The valorisation of GGBS (Ground Granulated Blast Furnace Slag) in the construction industry is well known in EU mainly within the cement and concrete industry through direct GGBS additions to OPC (Ordinary Portland Cement) at the ready mix plants or precast plants. Usage of GGBS is advantageous since it lowers the clinker to cement ratio and consequently the environmental impact of products. Also, presence of GGBS in concrete is known to provide long term benefits both in terms of mechanical strength and durability. Only limited amounts of GGBS are considered acceptable in slag cements and GGBS/OPC mixtures due to low short term mechanical performances. The goal of the ACTISLAG project is to improve the short-term reactivity of GGBS. To reach this objective, a better understanding of the mechanisms limiting GGBS short term reactivity will be investigated.

### **Mission**

The post-doctorate will be involved in developing new knowledge on the reactivity of GGBS. Dissolution tests using chemical solutions simulating environment of reaction at early age will be designed to evaluate the efficiency of the activation routes. Chemical analysis of solutions (ICP-OES, ionic chromatography, pH, ...) and isothermal calorimetry experiments will be applied. Characterization of products of reaction will also be done by methods used for microstructure investigations (X-Ray Diffraction, TGA, SEM, RPE, Raman, Synchrotron...). The candidate will collaborate with other entities of the project and will be in charge of administrative staff regarding the project.

### **Profile of candidates**

PhD in Geochemistry/Chemistry of Materials/Glass science/Civil engineering

An experience with dissolution and/or isothermal calorimetry tests will be appreciated

A good knowledge of English and French would be a precious asset.

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