



### **INTERSHIP POSITION # 3**

**MATERIAL SCIENCE, CHEMISTRY or CHEMICAL ENGINEERING**

**DATE:** From the 2<sup>nd</sup> day of August 2022 to the 28<sup>th</sup> day of July 2023

**AREA WITHIN THE COMPANY WHERE THE STUDENT WILL PERFORM THE INTERSHIP:** Global Research and Development, Binders Technology

#### **POSITION PURPOSE:**

Global Research and Development Department is a core team inside CEMEX RESEARCH GROUP based in Switzerland. The aim of the team involves research and development of new products and solutions for the different challenges CEMEX has as a key global player in the construction industry as well as specialized technical troubleshooting for all CEMEX operations, mainly Cement, Concrete, Aggregates and Admixtures.

#### **PROJECT TO BE DEVELOPED: Binders development**

##### **ACTIVITIES:**

- Desk research about the binder systems and laboratory techniques involved in the project.
- Support to binders technology focused in the characterization and testing of supplementary cementitious materials / alternative clinker systems.
- Perform laboratory test to evaluate chemical and mechanical performance of binders systems.
- The characterization of the obtained binders includes Particle Size Distribution analysis, Blaine, XRD, SEM, surface properties and reactivity, compressive and flexural strength, among others.

##### **DELIVERABLES / OUTCOMES:**

- Report of the desk research performed about the binder systems studied in the project.
- The student will generate useful knowledge for supplementary materials understanding and its development.
- Evaluate and proof concepts by testing selected methods.
- Proposal and validation of an action mechanism model.

##### **CAPABILITIES:**

- Knowledge in instrumental equipment operation: XRD, XRF, SEM, Blaine, Particle Size Distribution, wet-chemistry techniques, and physical testing.
- Analytical and problem-solving skills
- Understanding safe handling procedure of all chemicals and laboratory equipment
- Data analysis and technical writing
- Teamwork and communication skills

##### **CHALLENGES:**

The student will deal with a comprehensive, industrially relevant topic, from the conception to the application, will have the support of the Chemical Technology Development team and the Global Research Laboratory as well as training about the construction industry technologies, in order to have an overall view of the topic. Furthermore, the student will have the opportunity to work in the global research facility of one of the world biggest players in the construction material field.