

Insertion of mineral phases in concrete: mechanisms of long-term interaction between SCM mineral components and clinker, and possible alternative uses

(Proposer: ENI Spa; UNIPD reference: Prof. Gilberto Artioli)

The project focuses on the mineral materials produced during the storage of CO₂ in the stable solid state. The stabilization into mineral form of the CO₂ emissions from industry is one of the processes implemented towards the mitigation of the climate changes induced globally by green-house gases released in the atmosphere. Furthermore, in the frame of truly circular economy and the zero-waste industrial target, the substantial amounts of mineral produced by CO₂ storage need to be efficiently re-used in economical activities. Since the most used material globally is concrete, a viable solution is to produce mineral phases that can be incorporated in construction composites, either as inerts or as reactive SCM (supplementary cementitious materials). The present research project aims to characterize the existing mineral phases produced during the CO₂ stabilization, to understand their short and long term behavior within the concrete composites, and eventually explore potential applications in alternative industrial productions.

