

Research Project and Supervisory Team

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Short Introduction & Description of Research Project	<p>Research Project Title Study on CO₂ Mineralization Curing of Lightweight Concrete based on Water-Quenched Slag from Blast Furnace Co-Processing of Fly Ash</p> <p>Abstract Fly ash from municipal solid waste incineration (hereafter referred to as "fly ash") is classified as hazardous waste as it contains large amounts of chlorine salts, leachable heavy metals and highly toxic dioxins. On the other hand, it is rich in supplementary cementitious materials (e.g., SiO₂, CaO and Al₂O₃) that can be used as a concrete admixture to replace cement. Currently, China is facing the dual pressure of safe disposal of fly ash and CO₂ emission reduction in cement industry. To address these issues, herein we proposed a blast furnace based integral technical route for the harmless treatment and resource utilization of fly ash as well as CO₂ sequestration. Firstly, the water-quenched slag (WQS) from blast furnace co-processing cold briquetted dechlorinated fly ash will be studied, to ensure it meet the environmental safety regulations. On top of this, the effects of CO₂ mineralization (i.e., mineral carbonation) curing conditions on the mechanical properties, carbon sequestration rate and heavy metal leaching of lightweight concrete based on WQS will be investigated. The successful implementation of this project will convert fly ash into green construction materials and help achieve the goals of "waste-free cities" and "carbon neutrality" in China.</p>
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