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Department of Civil and Environmental Engineering

Study on carbonation mechanism of silicate minerals

by

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Host: Dr Du Hongjian

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Venue: E5-03-19
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Abstract

Accelerated carbonation is expected to be a potential technique for sustainable development of cement-based materials, where the strength is significantly increased in several hours and greenhouse gas CO₂ is stored permanently. The crystal growth of calcite during the carbonation of silicate phase plays a diagenetic role in denser structure of the system, and the system eventually forms a dense structure similar to that of natural rock. Therefore, the growth of calcite crystal plays a decisive role in the strength development of carbonated products. In the process of carbonation, the density, microstructure and etc. of clinker minerals and hydration products evolution gradually. The carbonation reaction rate, degree, reaction heat, density, volume and product evolution of each mineral were found. Different silicate clinker minerals and hydration products have different carbonation properties, that is very important for the preparation of building materials by carbonation technology.



