Special Issue

Properties and Microstructure of Concrete Materials

Message from the Guest Editor

Cement concrete, as the most widely used building material in the world, has been adopted in buildings, highways, bridges, and airports owing to its low price and high strength durability. Based on the special operating environments and high-performance requirements, cement-based materials can be categorized either as shotcrete, engineered cementitious composite (ECC), or ultra-high-performance concrete (UHPC). Shotcrete is the single-shell rock support lining in tunnels, and its performance is crucial. In harsh environments, the deterioration of shotcrete and the interface between shotcrete and the surrounding rock have been subject to intense interest. Although ECC and UHPC, as the complete theoretical design systems of concrete, have been developed over 30 years, the damage mechanisms under a variety of aggressive environments are still unclear. Moreover, tremendous modification methods are being developed to enhance their durability. In recent years, applying nano-structured materials in cement has been recognized as an efficient way to improve the performance of concretes. Nano-modification will be the most prominent method of concrete in the future.

Guest Editor

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