Special Issue

Corrosion of Reinforced Concrete Structures in Civil Engineering and Architecture

Message from the Guest Editors

In an attempt to overcome limitations associated with the service life of materials, corrosion engineering know-how and research efforts are key for designing smart sustainable construction materials, thus guaranteeing corrosion resistance and structural integrity in civil engineering and architecture. New coating formulations and surface treatments are also being developed and used for protection against corrosion of reinforced concrete structures. Current efforts focus on developing more reliable lifetime predictive models that combine mechanical and electrochemical processes while also considering corrosion initiation and propagation stages. Different corrosion protection and management strategies have been implemented, such as stainless steel reinforcements, corrosion inhibitors, smart coatings, cathodic protection, and new geopolymer cementitious materials. Advanced electrochemical monitoring and characterization techniques are enabling the fundamental understanding of thermodynamics, reaction kinetics, and transport mechanisms governing corrosion phenomena of steel in concrete.

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