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Selected Papers from the 17th International Conference on Alkali-Aggregate Reaction in Concrete (ICAAR 2024)

Guest Editor:

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Message from the Guest Editor

Alkali-aggregate reaction is one of the most harmful distress mechanisms affecting concrete infrastructure worldwide. AAR is a chemical reaction between alkali-hydroxides from the concrete pore solution and some unstable mineral phases present in the aggregates used in concrete. AAR provides a gel that swells upon moisture uptake, leading to induced swelling and deterioration of the affected concrete.

The purpose of this Special Issue is to select important contributions from the 17th International Conference on Alkali-Aggregate Reaction in Concrete (ICAAR 20224, Ottawa, ON, Canada) that discuss alternative, advanced, and innovative techniques/protocols able to a) reliably and quantitatively appraise the current (i.e., diagnosis) and future (i.e., prognosis) condition of AAR-affected infrastructure, b) evaluate the current and future structural implications of the induced expansion and deterioration, c) cease or at least significantly decrease AAR-induced development rate in the field, increasing the serviceability, durability, and safety of affected structures, and d) better guide infrastructure owners and engineers in the decision making of affected structures.

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Message from the Editor-in-Chief

Current urban environments are home to multi-modal transit systems, extensive energy grids, a building stock, and integrated services. Sprawling neighborhoods are composed of buildings that accommodate living and working quarters. However, it is expected that the cities and communities of the future will face complex and enormous challenges, including maintenance, interconnectivity, resilience, energy efficiency, and sustainability issues, to name but a few. A smart city uses advanced technologies and a digital infrastructure to improve the outcomes in every aspect of a city's operations. A smart building optimizes the experience of occupants, staff, and management by using a modern and connected environment. Innovations in technology that can bring dramatic improvements to design, planning, and policy are critical in developing the cities and buildings of the future.

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