

Special Issue on **Aging of Concrete Structures and Infrastructures: Causes, Consequences, and Cures (C³)**

CALL FOR PAPERS

Aging of any concrete structure is a natural process, but it has become an urgent and critical problem in recent years during which long operating dams and nuclear power plants have begun to lose reliable life. A large number of infrastructures all over the world are over 50 years old and suffer from extensive deterioration that affects their serviceability. The high costs associated with preserving the aging structures along with the limited funds allocated for their maintenance pose significant technical and financial challenges, which requires the systematic approaches for risk-informed condition assessment. Only in the USA, the American Society of Civil Engineers (ASCE) estimates an investment of about 3.6 trillion dollars by 2020 to improve the condition of infrastructures to an acceptable level. This is more than twice the anticipated funding level. Aging usually begins to appear in individual elements of the structures, leading to nonuniform or heterogeneous behavior. The most well-known and widespread signs of aging of a structure are related to weakening of concrete mechanical properties.

In this special issue, we solicit high quality research and review articles focused on the state-of-the-art techniques and methods employed in aging, deterioration and damage analysis, and assessment in concrete structures and infrastructures. We welcome both fundamental and application oriented papers of high technical standard across various disciplines, which would facilitate awareness of techniques and methods in one area that may be applicable to other areas.

Potential topics include but are not limited to the following:

- ▶ Concrete aging at material level
 - ▶ Diagnosis and prognosis of aging phenomenon
 - ▶ Alkali aggregate (silicate or carbonate) reaction
 - ▶ Chloride ion attack and corrosion of the reinforcement
 - ▶ Freeze-thaw deterioration
 - ▶ Effects of radiation on aging concrete
 - ▶ Concrete creep and shrinkage
- ▶ Concrete aging at structural level
 - ▶ Field measurements, maintenance, and repair of the aged structures
 - ▶ Life-cycle performance assessment
 - ▶ Numerical modeling in micro-, meso-, and macrolevels
- ▶ Risks associated with concrete aging
 - ▶ Reliability of aged dams, nuclear structures, and bridges
 - ▶ Multi hazard resilience and sustainability
 - ▶ Uncertainties associated with concrete deterioration

Authors can submit their manuscripts through the Manuscript Tracking System at <https://mts.hindawi.com/submit/journals/amse/acsc/>.

Papers are published upon acceptance, regardless of the Special Issue publication date.

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