

## Special Issue on Initiation Mechanisms, Propagation, and Consequences of Concrete Reinforcement Corrosion

### Call for Papers

In all concrete constructions, in addition to the common strength related problems, it is the seriousness of the environmental loading which may significantly decrease the concrete's durability and the construction's service lifetime. The most common case of reinforced concrete deterioration is the corrosion of steel reinforcement. The initiation mechanisms leading to steel depassivation, such as concrete carbonation and chloride penetration, although they have been thoroughly studied and modelled in the past, still have grey areas, such as the definition of chloride threshold values, combined deterioration actions, extreme environmental conditions, and protection measures. Moreover, for the corrosion propagation period still there are no acceptable models to simulate the corrosion rate and further to estimate precisely the time when the corrosion progress signals the end of the structure service life.

We invite investigators to contribute original research articles as well as review articles that will stimulate the continuing efforts to understand, analyse, and simulate the main corrosion initiation mechanisms, the propagation period, and the main consequences on mechanical properties of steel and concrete. We are particularly interested in articles describing combined effects of two or more initiation mechanisms; advances in mathematical modelling and effective protection measures; new insights into corrosion propagation and consequences; and current concepts in the efficient protection against corrosion through design, materials, and techniques. Potential topics include, but are not limited to:

- Recent advances in carbonation and/or chloride induced corrosion
- Role of combined initiation mechanisms on concrete reinforcement corrosion
- Recent advances in the testing and modelling of chloride threshold levels for service life design application in connection with organizations' recommendations, that is, RILEM 235-CTC
- Recent advances in mathematical modelling of corrosion propagation
- Recent developments in quantitative estimation of corrosion consequences

- Advances in quantitative estimation of concrete service life due to reinforcement corrosion
- Latest technologies for effective protection measures, materials, and techniques
- Advances in role of supplementary cementing materials
- Role of climate change and/or extreme environmental conditions

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Manuscript Due	Friday, 6 September 2013
First Round of Reviews	Friday, 29 November 2013
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