

Award-winning paper in 2015

Papers published in *Advances in Cement Research* are eligible for awards from the Institution of Civil Engineers. Papers from any of the ICE journals can be nominated for several awards. In addition, each journal has awards dedicated to their specific subject area.



Isabel Galan and Fredrik P Glasser, winners of the Thomas Telford Premium Prize, with ICE president, John Armitt

On Friday 7 October 2016, ICE president John Armitt presented an award to the following paper published in *Advances in Cement Research* in 2015. The editorial panel nominated their best papers and an awards committee chaired by Nigel Wright allocated the award.

Thomas Telford Premium Prize

The Thomas Telford Premium Prize, presented for the best paper published in *Advances in Cement Research*, was awarded to Galan and Glasser (2015).

Abstract

Portland cement–steel composites frequently take up chloride from their service environment. The degradation processes and test methods are described through a critical review of the literature. Plain cement paste is not much affected by chloride except for increased solubilisation of cement solids, but chloride is detrimental to the passivation of embedded steel. Emphasis is placed on establishing the underlying physicochemical concepts and mechanisms of corrosion, and integrating these into a holistic picture. Simplistic calculations and test conditions probably do not reproduce well the complex reactions with cement components occurring at the steel–cement interface and the concept of a ‘threshold’ – defined in terms of a critical chloride content or chloride:hydroxide ratio – is just an approximation at best: other cement components are involved, as is the oxygen activity at the interface. Chloride binding can retard the migration of chloride in concrete and specimen calculations are presented showing that the main binding mechanism arises from the AFm, $[\text{Ca}_2(\text{Al},\text{Fe})(\text{OH})_6]\cdot\text{X}\cdot n\text{H}_2\text{O}$, content of the paste. Suggestions are made to enhance the value of experimental approaches to corrosion.

REFERENCE

Galan I and Glasser FP (2015) Chloride in cement. *Advances in Cement Research* **27(2)**: 63–97, <http://dx.doi.org/10.1680/jadcr.13.00067>.