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Award-winning paper in 2017.

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Announcement

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Award-winning paper in 2017

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.

On Monday 8 October 2018, ICE president Professor Lord Robert Mair presented an award to the following paper published in *Advances in Cement Research* in 2017.

The editorial panel nominated their best papers and an awards committee chaired by Nigel Wright allocated the awards.

Advances in Cement Research Prize (best paper in the journal)

The best paper was awarded to Xia *et al.* (2017).

Abstract

Expansive agent was added in concrete to compensate shrinkage and improve resistance against shrinkage induced cracking. This study investigates cracking evolution of restrained cementitious materials with and without expansive agent based on a comprehensive analysis of residual stress and acoustic emission (AE) signals. Residual stress was

calculated according to the measured strains in a dual-ring test.

AE parameters such as AE counts, energy, frequency, amplitude and the AE based *b*-value were studied. The obtained results indicated that the addition of expansive agent led to expansion at early ages, in which case the cement pastes were in a state of compression and the residual tensile stress was delayed. As the material neared the age of visible cracking, an abrupt residual stress release, as well as an obvious AE characteristic (e.g. AE counts and energy) change, would be observed. The most AE hits had an average frequency around 50 kHz. AE hits with larger amplitude occurred less often than the AE hits with smaller amplitude, but the corresponding energy released was much higher. A remarkable decreasing trend in *b*-value was observed before the sudden residual stress release for the plain cement paste, whereas for the paste with expansive agent the *b*-value varied relatively smoothly.

REFERENCE

Xia Q, Li H, Yao T *et al.* (2017) Cracking behaviour of restrained cementitious materials with expansive agent by comprehensive analysis of residual stress and acoustic emission signals. *Advances in Cement Research* **29(2)**: 81–90, <https://doi.org/10.1680/jadcr.16.0011>.