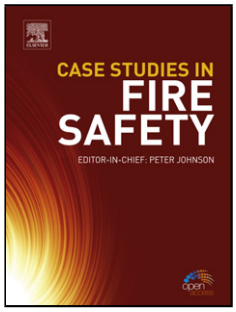

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A coupled diffusion-mechanical model with boundary element method to predict concrete cover cracking due to steel corrosion

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Highlights:

- A coupled diffusion-mechanical model based on boundary element method to calculate crack propagation in concrete due to steel corrosion was presented in this paper.
- Non-uniform corrosion distribution around the steel was considered.
- Influences of fracture parameters of concrete and rust properties on crack width evolution were examined.
- The delaying effect of crack propagation caused by considering rust penetration into cracks was modeled.

Abstract: Concrete cracking caused by steel corrosion is one of the most important durability issues for reinforced concrete structures. A coupled diffusion-mechanical model has been developed in this study to predict the crack propagation in concrete