

Salt decay and salt mixtures in the architectural heritage: a review of the work of Arnold and Zehnder

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Abstract

Salt decay is one of the main decay mechanisms of the porous building materials but due to its complexity progress has been slow, both regarding the understanding of the mechanism itself and the definition of mitigation solutions. Research has so far privileged a reductionist approach, focusing on the behavior of a few individual salts. However, the typical reality of these constructions are multi-ionic solutions from which, depending on the conditions, different types of salts can precipitate in different crystalline forms. The originality of Arnold and Zehnder was that they did not embrace reductionist approaches, maintaining the focus on salt mixtures and the way these behave in real constructions. This path led to approaches to the problem and possible mitigation solutions that have not yet been adequately discussed and explored. In this review, I seek to identify the most interesting contributions of the two authors and the directions they suggest for future research.

Keywords: Andreas Arnold, Konrad Zehnder, salt, efflorescence, salt decay, salt mixtures, monitoring, preventive conservation, architectural heritage