X Ray 3D imaging of construction materials

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Abstract

Construction materials exhibit a complex microstructure and understanding this microstructure is key in optimising the properties. 3D imaging techniques are today available to analyse this microstructure and are becoming more and more useful in the case of complex microstructure. X Ray Computed Tomography (XRCT) is probably one of the most interesting of these techniques as it is multiscale and non destructive. In this lecture we will present a review of qualitative images that our group has obtained over the years for different construction materials. We will also give examples of in situ experiments of different natures (compression, indentation, double torsion, setting). Finally we will also examplify microstructurally faithfull simulations based on these images and Digital Volume Correlation to measure displacement fields.

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