

Multi-dimensional X-ray Investigation of Materials - Ranging from classical Bragg-Brentano type diffraction phase analysis to 3 dimensional CT microstructure analysis

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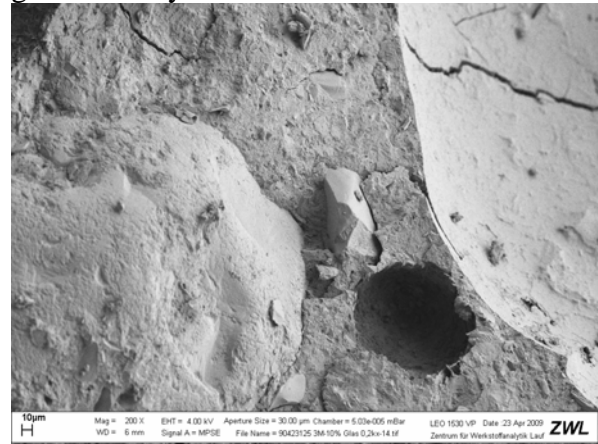
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- In this study some laboratory made concrete bars were used to study the physical properties, but also to develop mineral formation to increase stability in environment. Two different concretes were used in comparison , one with norm sand and another one in which partially the sand was replaced by glass powder. The applied X-ray methodology gives information on
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- Density (0D) , Phase formation (1D), Phase distribution (2D), Microstructure (Fabric) and Pore Distribution (3D)

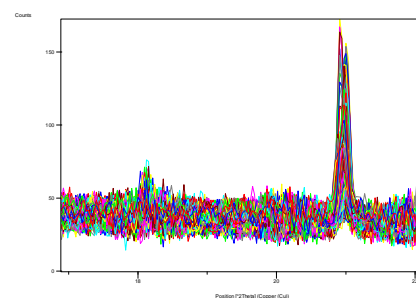
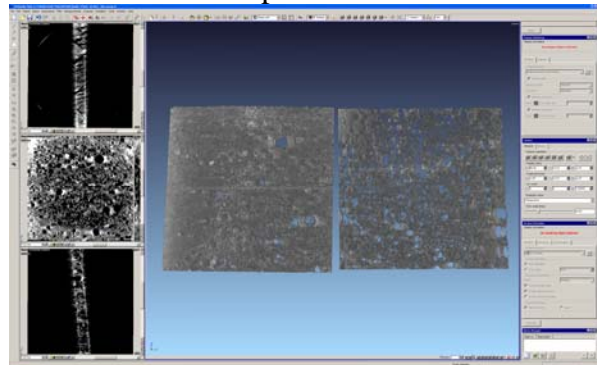


Macroscopic view of the concrete sample
4 x 4 x 0.2cm

Microscopic sample description, pores, sand grains and hydrated cement



Microstructure and pore distribution



Analysis of phases, Portlandite and Quartz

The combination of phase analysis, density and microstructure using an X-ray platform allows to correlate nanoscopic features with material properties and to estimate the durability.