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EINLADUNG

zum Gastvortrag

von

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am

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Technische Universität Wien, Karlsplatz 13, 1040 Wien
Sem 202 (Stiege 2, 2. Obergeschoß + Halbstock)

New advances in the chemo-mechanical characterization of heterogeneous microstructure of concrete composites

Abstract

Fostering sustainable concrete requires a comprehension of the key microtructure parameters and an efficient multi-scale approach. To contribute to this endeavor, this work characterizes the microstructure phases occurring in highly heterogeneous cement systems. Coupled NanoIndentation and Quantitative Energy Dispersion Spectroscopy (NI-QEDS) was employed to investigate at the micrometer scale the chemo-mechanical properties of the hydrous and anhydrous phases (1). The micro-chemo-mechanical properties of the hydrate phases (e.g., calcium-silicate-hydrates including or not aluminum C–(A)–S–H, calcio-aluminous hydrates, Portlandite, AFm, etc.) (2,3). As first order approach, micromechanics was employed to show their role in the macro-scale properties was determined by first-order homogenization approaches. Finally, the presented show the importance optimizing complex arrangement of several hydrous and anhydrous phases for designing novel cementitious matrices.

REFERENCES

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3. Wilson W, Sorelli L, Krishnan S, Bishnoi S, Tagnit-Hamou A. Micro-Chemo-Mechanical Characterization of a Limestone-Calcinated-Clay Cement Paste by Statistical Nanoindentation and Quantitative SEM-EDS. In: Calcined Clays for Sustainable Concrete. Springer; 2018. p. 494-9.