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Quantification of Phase Composition in Ceramic Materials

The firing transformations of clay-based ceramic materials are of technological interest, and are usually reported qualitatively or only semi-quantitatively. Nevertheless, such systems present significant complexity, especially for X-ray diffraction techniques, due to the presence of fully crystalline, low crystalline and amorphous phases.

The presentation will report on quantitative analysis of a triaxial (clay-quartz-feldspar) fired ceramic, containing fully crystalline (kaolinite, quartz, feldspars and/or mullite), low crystalline (metakaolinite and/or spinel type pre-mullite) and glassy phases, by means of full-profile analysis of X-ray diffraction spectra by Rietveld method.