

## Characterisation of microstructure and crystallographic texture of ceramics

Daniel Chateigner

*CRISMAT-ENSICAEN, IUT-Caen, Université de Caen Basse-Normandie*

*6 Bd. M. Juin, 1405, Caen*

daniel.chateigner@ensicaen.fr

The elaboration of advanced ceramics points more and more to the necessity of complex characterisations, in the aim of determining phase fractions, structures, microstructures, textures, porosities ... This has for long limited the use of full x-ray diffraction analysis, because such ceramics often exhibit complex diffraction patterns with a lot of peak overlaps. Such a behaviour is even more pronounced when peak shapes are strongly asymmetric like in the case of silicate turbostratic stacks.

The Combined Analysis formalism was developed recently which offers a large capacity in resolving the former problem, when using x-ray or neutron diffraction analysis tools. Furthermore, such an approach prevents from biases introduced in the determination of, for instance, microstructure parameters, when they are coupled with other parameters, like texture for instance.

We will illustrate the Combined Analysis approach on examples of characterisations of single and multiphase ceramics exhibiting textures, crystallite sizes and microstrains, and turbostratic behaviours. We will see that not only the texture, but the structure, the residual stresses, phase contents and microstructures become available at once when using such a technique, which only requires some instrumental facilities at a laboratory x-ray source.