

## **Structure/Microstructure and their Interplay in Nanomaterials and Layered Systems**

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Microstructure deeply influences the properties, and thus the functionality of a material. In an X-ray diffraction pattern, the microstructure information is usually extracted from the breadth and shape of line profiles. Odd profile shapes, deeply anisotropic line profile broadening and extra features are present in the pattern and can witness an intimate interplay between structural and microstructural features. The Whole Powder Pattern Method and the DIFFaX+ approaches can be used to extract microstructure and structure/microstructure information from traditional, layered and modular structures presenting some local or global reduction of the lattice symmetry due to the presence of defects. Basics and examples of both methods will be shown and commented.