

# **Transformations des interstratifiés illite-smectite vers l'illite et la phengite : un exemple dans la série carbonatée du domaine Briançonnais des Alpes suisses romandes**

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During the last fifty years, the progressive transitions of smectite or illite/smectite (I/S) to illite has been intensively studied. Most recently these studies have focused on the microscopic scale of these transformations in diagenetic material. Fewer studies have been made on mineral transformations from conditions of the anchizone, which marks the transition between diagenesis and greenschist facies. Work presented in this thesis is an attempt to characterize the I/S coherent scattering domain size and the amount of interstratification in mixed-layer minerals from the anchizone. Diffraction theory and analytical XRD methodology and results are presented.

Examples are given from carbonate rocks of the Briançonnais domain of the western Swiss Alps. These rocks contain minerals defining the transition zone between smectite to illite, similar to what is observed in sedimentary basins. With increasing metamorphism progressive transformations are recorded that mark the evolution of mixed-layer I/S to phengites. These transformations occur contemporaneously with an increased mean number of consecutive illite layers (NFP) and increased grain sizes. In the anchizone illite cristallinity is an indirect measurement of NFP. Estimations are given as NFP=20 for the diagenesis- anchizone transition and NFP=70 for the anchizone-epizone transition.

Isotopic dating and thermal modelling link these mineral transformations and their geological settings. The Prélapes Médiannes escaped significant metamorphic effects because they were detached from their original substrate, which underwent greenschist facies metamorphism.