General Theme 4
4.3

An increasing number of recent studies have highlighted the existence of different, multistage pathways for the formation of carbonate minerals and their transformation during diagenesis. Experimental approaches and real-time, in-situ visualization and identification allow detangling the fundamental reaction mechanisms and the impact of individual dissolution/re-precipitation processes on crystal texture, 3D fabric, chemistry and mineralogy. Current challenges in reactive transport approaches aim towards incorporating these complexities in surface processes, heterogeneities and interactions at the nano- to micrometer scale as well as their ultimate effect on fluid transport and changes in rock transport properties.

This session will focus on experimental and numerical studies that contribute to our understanding of different aspects of precipitation and dissolution of carbonate minerals, their potential (amorphous) precursors and the potential role of associated mineral phases (e.g. evaporates, Mg-silicates, phosphates), micro-organisms and organic substances. The session welcomes contributions combining dynamic visualization, quantification and molecular to pore-scale computational approaches that can provide direct and continuous information on speciation and structure as well as on petrophysical and mechanical property changes.
Specific cases studies are welcomed, these could include (but not limited to), in situ evaluations of natural environments that have implications as potential analogues for the understanding of processes that were active in ancient buried successions. Other aspects could include in-vitro laboratory experiments and the overall carbonates evolution in CO_2 storage and geothermal settings as well as impacts on building remediation.