Dipartimento di Scienze della Terra e dell'Ambiente

1. Project title

From paragenesis to diagenesis modelling (DiaMod)

2. Proposer

Surname	**Di Giulio**	
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3. Research Unit

Surname	Name	Institution
Consonni	Alberto	ENI R&D
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4. Key words
(Max. 5 – at least 2)

Paragenesis, dating, clastic rocks, carbonate cements, diagenetic modelling

5. Abstract
(Max.1.500 characters with spaces)

Diagenesis is the complex of physical and chemical processes occurring to sediments during burial. It has a direct impact on reservoir quality and has to be understood and modelled by numerical tools to perform Reservoir Quality Prediction studies.

The diagenetic model of a rock is the time succession of precipitation, dissolution, fracturation events occurring during burial. From petrographic observations a list of time relationships between diagenetic events can be compiled and put in relative time succession (paragenesis), with help of ordination algorithm.

The activity of the PhD will be the definition of a workflow for the use of advanced experimental techniques to determine more precisely the input necessary for a comprehensive diagenetic model otherwise determined with only petrographically determined relative timing, broad assumptions about fluid chemistry etc.; they include the age of diagenetic events, temperature of cement precipitation, chemistry and origin of diagenetic fluids through time, etc.

The project will be particularly focused on carbonate cements in clastic rocks with the aim of establishing a possible workflow to apply to the study of clastic reservoirs. The problem will be challenged through the integrated use of cutting edge and consolidated techniques all available in the DSTA-CNR Pavia Labs and S.Donato ENI's Labs. Specifically, they are: the new Confocal Microraman Spectrometer (DSTA); the new quadrupole Mass spectrometer (ICG-CNR), the Fluid Inclusion Microthermometric Lab (DSTA), and the SEM-EDX-CL Lab. (ENI).