



## Report on the Short Course on Sedimentary Petrology, June 15-16, 2021, University of Bari (Italy)

Dear SEPM Members, as SEPM Ambassador for Italy, I am pleased to present a report on the *Short Course on Sedimentary Petrology*, held in the Earth and Environmental Sciences Department of the University of Bari (Italy), during 15-16 June 2021.

The course was organized by the PhD school of the Earth and Environmental Sciences Department at the University of Bari (Italy), in the persons of Prof. Stefania LISCO and Prof. Francesca MICHELETTI, and under the patronages and sponsorships of the Earth and Environmental Sciences Department of the University of Bari (Italy), The Geological Society of Italy, and the GeoSed Group (the Italian Association for Sedimentary Geology).

The PhD school of the Earth and Environmental Sciences Department Coordinator, Prof. Massimo Moretti, cordially invited PhD students to attend the short course held by expert academics. The number of registered participants was 20 and the Lecturers of the short course were as follows:

Prof. Giovanni GAGLIANONE (Earth Sciences Department, University "La Sapienza", Rome, Italy)

Prof. Stefania LISCO (Earth and Environmental Sciences Department, University of Bari, Italy)

Prof. Francesca MICHELETTI (Earth and Environmental Sciences Department, University of Bari, Italy)

Prof. Luigi SPALLUTO (Earth and Environmental Sciences Department, University of Bari, Italy)

Prof. Massimo MORETTI acknowledged all the participant and introduced the two working days of the course illustrating that the main topics of the short course would have dealt with both siliciclastic and carbonate rocks petrology and sedimentology. Specifically, the lectures focused on both petrographic methodological approaches and applications to several case-histories on modern sands and arenites of the stratigraphic record, and on carbonate modern sediment and ancient rocks.

The scientific contribution of prof. **Giovanni GAGLIANONE** provided two lectures on:

### **1. Sediments of the seagrass meadows: particle size, composition, and biogenic carbonate content**

The lecture treated the main sedimentological features of the sediments related to the seagrass meadows; the statistically more relevant types of bioclasts found in these sediments were discussed, analyzing both common and peculiar components of the temperate and the tropical environments.

### **2. The sedimentary facies of *Posidonia oceanica* seagrass meadows from the central Mediterranean Sea**

In this lecture was showed the sedimentary facies of the most widespread seagrass specie of the Mediterranean Sea. Sediments came from different meadows, characterized by different sedimentary inputs, wave motion and physiographic conditions; the presence of the seagrass meadows affect in a characteristic way the sedimentary facies, offering a valid contribution to the study of fossil sediments in which the presence of the seagrasses often it can only be inferred indirectly.

The scientific contribution of prof. **Stefania LISCO** provided two lectures on:

### **3. The provenance and the sediment routing system of modern beach sand**

In this lecture, mineralogical “fingerprints” of hybrid sands, quantified major fluvial inputs, along with major source rocks delivering sediment to the beach. Such information is particularly useful when considering planning of modern beach nourishment projects.

### **4. The sedimentary dynamics of *Sabellaria alveolata* bioconstructions (Ostia, Tyrrhenian Sea, central Italy)**

This lecture described the effects of the worm reefs built by sand and shells bonded together with a strong glue produced by the worm itself and thus how *Sabellaria alveolata* represents a sedimentological asset for the coastal protection, since it contributes to create natural barriers against storm waves and erosion and supplies the beach with new sandy deposits. In fact, such fragile sedimentary environment would hardly survive mechanical disaggregation due to breaking waves.

The scientific contribution of prof. **Francesca MICHELETTI** provided two lectures on:

### **5. U-Pb geochronology of detrital zircon and monazite**

This lecture provided the potentiality and use of U-Pb spot dating on detrital minerals applied to provenance studies on siliciclastic sandstones and providing crucial information on the ages of major crust-forming events in the source area(s).

### **6. The use of geochronology on diagenetic minerals**

This lecture focused on the approach of how different isotopic systematics, applied to the principal authigenic minerals of siliciclastic successions, help to constrain sedimentary basins depositional history.

The scientific contribution of prof. **Luigi SPALLUTO** provided two lectures on:

### **7. Carbonate rocks petrography: methodology and applications**

In this lecture was emphasized as both limestones and dolostones are well represented in the stratigraphic record, thus examining the petrographic characteristics of the principal kinds of carbonate rocks are fundamental for interpreting the depositional environments of ancient limestones/dolostones. Abiotic vs. biotic precipitation of carbonate sediments were largely discussed and clarified.

### **8. Petrographic features influencing basic geotechnical parameters of carbonate soft rocks from Apulia (southern Italy)**

This lecture emphasized that, in addition to their scientific interest, carbonate rocks also have considerable economic significance, as they serve as petroleum reservoirs.

My lectures focused on:

### **9. The factors controlling the composition of clastic sediments**

This lecture summarized the cumulative effects of modifications that may have place between the initial erosion of the parent rocks and the final burial during diagenesis, discussed in the context of the so-called *Sediment Routing System*.

#### **10. The point counting methods of sand(stone) detrital modes (*Gazzi-Dickinson Method vs. Indiana School Method*)**

This lecture presented one of the tools used when studying the petrographic composition of sand-sized sediments by means of thin section analysis under the polarizing microscope. Strengths and weaknesses of both petrographic methods were discussed.

The lectures dedicated to the use of petrography and geochronology of terrigenous arenites highlighted the record of tectonics in sedimentary siliciclastic archives and dispersal pathways within sedimentary basins, quantifying sedimentary budgets, useful for paleogeographic and paleotectonic reconstructions, as well as in in petroleum and mineral exploration. The lectures treated microfacies and sedimentology of carbonate rocks, stressed both biotic and abiotic controls of carbonate sedimentation in evaluating depositional models, reservoir rocks and limestone resources. The case-histories proved the broad range of applications of sand(stone)s and carbonate mineralogy and geochemistry in sedimentary environments from a variety of geological settings.

The short course ended with the acknowledgements of prof. Moretti who extended his sincere appreciation to all participants hoping that in the next academic year a short new course of Sedimentary Petrology could be organized.

Rende (Cosenza, Italy), August 24, 2021

Best regards

*Emilia Le Pera*