



UNIVERSITÀ DEGLI STUDI DI MILANO



Dipartimento di Eccellenza 2018-2022

LE GEOSCIENZE PER LA SOCIETÀ: RISORSE E LORO EVOLUZIONE

Corso di Dottorato in
Scienze della Terra



Milano - 28 Settembre - 2 Ottobre 2020 - Short course (3 cfu, 15 hours)

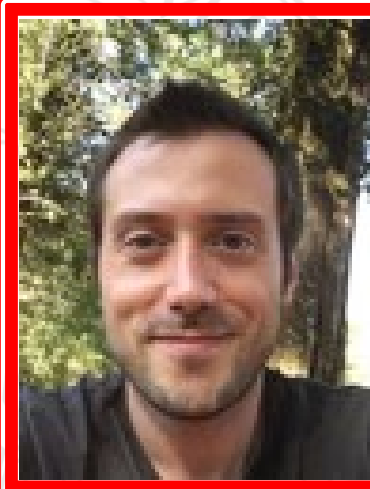
ORIGIN AND FATE OF ORGANIC MATTER FROM LAND TO OCEANS

by Dott. Gabriele GAMBACORTA



PROGRAMME

- * Introduction to organic facies and black shales
- * Mudrocks and black shale erosion, transport and deposition
- * Physical and chemical properties of mudrocks and source rocks
- * Mudrocks and source rocks lateral and vertical heterogeneity
- * Organic matter production, preservation and dilution
- * Principles of source rock sequence stratigraphy
- * Modern and ancient source rock depositional environments
- * Fine-grained sediments and black shales burial and diagenesis
- * Impact on Petroleum System



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Course description

The course is aimed at providing participants with basic knowledge about fine-grained sediments and black shales origin, characteristics, transport and deposition. The participants will learn the main processes controlling source rock and seal lateral and vertical heterogeneity, and their relative impact on the Petroleum System.

MODULE 1 (3 hrs)

- o Introduction to organic facies and black shales
- o Processes responsible for mudrocks and black shale erosion, transport and deposition
- o Physical and chemical properties of mudrocks and source rocks
- o Mudrocks and source rocks lateral and vertical heterogeneity from thin-section-, core-, log-, to seismic-scale
- o EXERCISE 1

MODULE 2 (3 hrs)

- o Organic matter production: type, amount, variation from proximal to distal settings, water column processes
- o Preservation processes: organic-matter degradation along the water column and at the sediment-water interface, organic carbon accumulation rate, burial efficiency, preservation factor
- o EXERCISE 2

MODULE 3 (3 hrs)

- o Organic matter dilution: sediment supply, distribution of organic matter in the different depositional environments, detrital sedimentation rate impact on dilution and preservation of organic matter
- o Principles of source rock sequence stratigraphy
- o EXERCISE 3

MODULE 4 (3 hrs)

- o Modern and ancient source rock depositional environments from marine to continental settings
- o EXERCISE 4

MODULE 5 (3 hrs)

- o Fine-grained sediments and black shales burial and diagenesis
- o Impact of source rock and seal heterogeneities on Petroleum System
- o EXERCISE 5

