



Hydrocarbon Reservoir rock sedimentology

Course Overview

This course introduces the principles of sedimentology, diagenesis and hydrocarbon systems as applied for clastic and carbonate rocks. The main course focus is on the classification schemes and nomenclature of texture and porosity types; the processes of sedimentation and their products in different depositional environments and post-depositional modification. Carbonate and clastic basics of sequence stratigraphy will also be covered in this course.

This course is aimed at geoscientists who require an understanding of reservoir rocks depositional systems and diagenesis.

Petrographical thin section analysis could be also included to the course in the case of light microscope availability to the attendees or alternatively rock properties can be examined using thin section photographs.

Course Outline

Clastic Sedimentology

- Introduction
Introduction to clastic sediments, grain texture
Principles of hydrodynamics, Bedforms, sedimentary structures,
- Clastic Rocks Classification
Discussion about popular classifications for clastic rocks
- Depositional Environments
Major sedimentary processes; Bedload shapes, major texture types and Indicative features for:
Alluvial fans,
Fluvial environments,
Deltaic environments
Shallow Marine Environments
Deep Marine Environments
- Basic Concepts of clastic sequence stratigraphy
Controls on sedimentary depositional systems, accommodation space, sediment supply, sea-level change, transgression and regressions, parasequences in the Shallow Marine environment
Sequence stratigraphy of marginal and non-marine systems
 Base level and fluvial response to base level change, Sequence boundaries and systems tracts in the non-marine, parasequences in the non-marine, channel geometries and connectivity
- Clastic rocks Diagenesis
Digenetic environment, digenetic processes including physical and chemical compactions, cementation, dissolution and clay precipitation.
- Pore systems in sandstone
Definition of different types of porosity in sandstone, pore network modelling and control of porosity and permeability