# TPA INTEGRATED WEEK

## Mineral and Organic Geochemistry

Institut Teknologi Sepuluh Nopember (ITS) in collaboration with TOTAL E&P Indonesie Total Professeur Associes (TPA) will present a 5-day short course (Integrated Week-IW) "MINERAL AND ORGANIC GEOCHEMISTRY". The lecture in this course will be conducted in English. The course will be held in ITS Surabaya (Venue: Ruang Sidang I, 1st floor Gedung Rektorat), June 16th-20th 2014. Lecture materials,snack,lunch, and certificate are FREE. The Organizer has a right to limit the participants if total participants exceeding the limit (40-45 participants). The participants could be Bachelor/Master students in Enginering (Petroleum, Geology, etc) or Sciences who are interested in activities performed during Hydrocarbon Fields Development. Note that the certicate will only be given for participants with a minimum attendance of 90% and more than 60% rating after examination (in the last day of IW). Detail of course materials and the instructor background is shown in the following.

### INSTRUCTOR

**Jean-Claude Lacharpagne** gained his M.Sc. in geology – petrography from Clermont-Ferrand University (1968). His main activities lead him successively to Uranium exploration (1971-1973), then tin – tungsten ore bodies' laboratory studies, and finally synthesis and field exploration in porphyry copper deposits.
From 1983 to 2005 he was involved in Petroleum exploration with Elf, then Total, as inorganic geochemist, mainly for laboratory studies on exploration projects with participation to numerous research projects.
His teaching activities are related to inorganic diagenesis processes occurring during sandstone burial, where the impacts on reservoir characteristics such as porosity and permeability are determinants for economics.

**Daniel Dessort** gained his M.Sc. in Science and Techniques (physiological engineering), graduate in signal processing, and post graduate in molecular biology and neurochemistry.
He has experiences as scientist in signal processing of biological signals and as research engineer at French National Research Centre in Neurochemistry in Strasburg. Then he managed the organic geochemistry lab in Elf (Pau) and was project leader in geochemistry at Total. Daniel is presently project leader in organic geochemistry at Total Research Centre Qatar (Total E&P Golfe Ltd Qatari Branch).
Daniel authored or coauthored more than 80 articles published in international magazines or presented at international seminars.

**Prerequisites**:
Even though the proposed talk is dedicated to the equivalent of a master or to the last year engineer level, the content may easily be adapted to more junior students in order to make them sensitive to the main keys of success in Petroleum Exploration to Production.

Daily Schedule of Short Course

| Time | Activities |
|---|---|
| 08.00 - 10.30 | Lecture and Discussion |
| 10.30 - 10.45 | Coffee Break |
| 10.45 - 12.00 | Lecture and Discussion |
| 12.00 - 13.00 | Lunch |
| 13.00 - 14.00 | Lecture and Discussion |
| 14.15 - 14.30 | Coffee Break |
| 14.30 - 16.00 | Lecture and Discussion |

### Short Course Material
**Mon-Thu, 08.00 - 16.00; Fri, 08.00 - 11.00**

**MINERAL AND ORGANIC GEOCHEMISTRY**

| Date | Topics |
|---|---|
| June 16 | **1) Geological Processes**<br>A general Keys to integrate organic and inorganic geochemistry in the large world of geology is presented. Earth formation dynamic, rock type occurrences, sedimentary basins and burial rules, sediments porosity - permeability reduction are followed by presentation of the petrographic "tool box". |
| June 17 | **2) Geological Cycle of Organic Matter**<br>Life in the deep biosphere. Geologic cycle of organic matter and preservation in the source rock. Factors controlling petroleum and gas formation, expulsion and post-generative alterations.<br>Standard analytical tools will be discussed: pyrolysis, gross composition measurement, detailed molecular analyses, biomarkers and stable isotopes.<br>Specific topics include stereochemistry and diagnetic alterations of carbon skeletons. Practical work on biomarkers and isotopes. |
| June 18 | **3) Mineral Diagenetic Sequences and The Reservoir Water Chemistry**<br>Presentation of processes protecting porosity, examples of diagenetic sequences. Prediction of porosity and permeability. Presentation of the reservoir water tool box and its application, interpretation of results in terms of reservoir filling, and reservoir connectivity. |
| June 19 | **4) The Application of Oganic Geochemistry**<br>Application of organic geochemistry to the exploration, development and production of gas, oil, condensates, bitumen and unconventional plays. Organic geochemistry for addressing environmental issues.<br>Practical work on application of geochemistry. |
| June 20 | **5) Overview**<br>An overview of the above presentation will be discussed with students, leaving room for questions and a more large discussion on the potential use of geochemistry in what concerns: Exploration, Appraisal, Development, Reservoir Monitoring and Environment. |
| | **6) Final Exam**<br>The Course will end with a short Quiz of 30 questions and the delivery of Certificate. |

Venue: Ruang Sidang I, 1st floor Gedung Rektorat, Kampus ITS Keputih, Surabaya

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