



## Online Training: Applied Petroleum Systems Analysis and Geochemistry in Exploration and Production

### Course Overview

Petroleum systems analysis (PSA) and geochemistry are widely used in exploration and are often seen as a specialist discipline. PSA evaluates the origin of petroleum (function of thermal history and source rock type), migration and entrapment of petroleum in sedimentary basins so requires some understanding of heat flow, source rocks and the mechanics of fluid transport. Geochemistry analyses petroleum fluids (gases, liquids) to provide information on their genesis and the processes they have been subject to. PSA together with geochemistry should really be seen principally as a discipline of integration grounded in sound geological science.

Understanding these subjects adds value by improving risking with respect to exploration and appraisal wells, maximising insight from legacy datasets, design appropriate work programs and data acquisition programs.

### Who is this course aimed at?

The course is aimed at geoscientists working in exploration, appraisal or production who wish to improve their understanding of petroleum systems analysis (PSA) and geochemistry and how the insights these disciplines can bring to improved subsurface risking and decision making. The course is aimed at geoscientists working in exploration, appraisal or production who wish to improve their understanding of petroleum systems analysis (PSA) and geochemistry and how the insights these disciplines can bring to improved subsurface risking and decision-making.

## Key questions covered in the course

- Will I find oil or gas in my basin or prospect and why?
- What does it mean to calibrate a basin model?
- How does migration operate? What is the role of faults?
- How do seals work?
- How do petroleum fields fill and mix? What are the implications for development?
- Can geochemistry be used in decommissioning?

## Programme

### **1. An introduction to petroleum systems and geochemistry. Introductions and definition**

- Top-down vs bottoms up approaches

### **2. Issues/challenges with application**

### **3. Basics re-cap:**

- Heat flow
- Source rocks and organofacies recap

### **4. PSA implementation**

- What does 'calibrated' mean?
- System GOR
- Migration: Faults - do we need them?
- Integration of geochemical data and PVT

### **5. First carrier bed**

### **6. Reservoir filling discussion**

### **7. Applied reservoir geochemistry – mixing timescales**

### **8. Applications in well integrity and abandonment**