

EUROBASIN

European Doctoral Training Center for Sedimentary Basin Studies

*We are pleased to announce a 4-day course for exploration geologists,
university academic staff and students specialising in petroleum geology*

Petroleum System Evaluation: Fluid Compositional Prediction

Brian Horsfield and Rolando di Primio
GeoForschungsZentrum Potsdam, Germany

Gas-oil ratio is a controlling economic variable in petroleum exploration and production. *In-situ* gas-oil ratio is strongly governed by phase behaviour in carrier systems, and this in turn is tuned by source facies and maturity of the drainage area over geological time. This course demonstrates how petroleum compositions may be predicted and the results applied in geochemical evaluations and basin modelling (e.g. phase or GOR prediction), and aims at providing an introduction to petroleum system modelling using a combined theoretical and hands-on basin modelling approach.

Key words:

- GOR prediction
- Compositional kinetics
- Modelling thermogenic and biogenic gas generation
- Overmature sources and reservoirs
- Inverted basins
- Marine and non-marine systems from Canada, U.S.A., Mexico, Norway, Indonesia
- Getting away from default parameters when basin modelling

Where and when:

Technical University of Berlin, Germany
16 – 19 September, 2003

Costs:

Industry participants:	2500 €
University Staff:	500 €
Graduate students	0 €

Course Contents:

Registration / Accommodation

Please note – the number of participants is limited to 20

Register now to avoid disappointment, depression etc.

Course Contents

Petroleum System Evaluation: Fluid Compositional Prediction



- Concept/Outline
 - Gas versus oil occurrence
 - Economics
 - Factors affecting GOR
 - Designing a geochemical programme
 - The task at hand
- The processes – an overview
 - Chemical constituents of petroleum
 - Deposition of source rocks
 - Kerogen formation
 - Generation, expulsion and migration
- Introduction to Basin Modelling
 - Principles of basin modelling
 - The conceptual model
 - Boundary conditions
 - Calculation of compaction, heat flow, fluid flow
- Bulk kinetics
 - Kinetic modelling
 - Activation energies; frequency factor
 - Lability and heterogeneity of kerogen
 - A strong word of caution for modelling coals
- Basin evolution and heat flow
 - Basin definition
 - Stretching related basins
 - Flexural basins
 - Megashear basins
 - Heat flow related to basin formation
 - Heat flow calibration
- PC exercises 1D modelling
 - Setting up a 1D model
 - Simulation, calibration
 - Interpretation:
 - Burial history
 - Thermal history
 - Maturation history
- Case study Porcupine Basin
- Compositional considerations
 - Macromolecules; from bio- to geo-
 - Pyrolysis Gas Chromatography – What the end user needs to know
 - Ardjura Basin, Indonesia
- Practical compositional predictions
 - Short chains, long chains, sulphur
 - Source rocks of the world
 - Alum Shale, Green River Shale

- Maturation characteristics
 - Bulk GOR quantification
- Compositional considerations from the field
 - Introduction to petroleum phase behaviour
 - PVT characterisation of petroleum fluids
 - Reservoir fluid sampling techniques
 - PVT simulation
 - Interpretation of PVT data
- MSSV
 - Simulating maturation: facts and myths
 - Calibration: Tithonian of Mexico, Duvernay of Canada
- PVT predictions
 - Predicting GOR and hydrocarbon phase
 - Using field data
 - Using lab data
 - In basin modelling
- PC exercises 2D modelling
 - Input and use of compositional kinetic data
 - Modelling HC-generation and migration
- Case study Porcupine Basin
- Secondary alteration, low temperatures
 - Effects of alteration on petroleum physical properties
 - Biodegradation
 - Gas flushing
- Secondary alteration, high temperature
 - In-reservoir oil cracking kinetics
 - Calibration, Central Graben
 - In-source cracking kinetics
 - Posidonia Shale vs. Heather Formation
- Research Frontiers, Asphaltenes
 - Use of asphaltenes as kerogen equivalents
 - GOR predictions
 - Bulk kinetics
- Research Frontiers, Early gas
 - Deep biogenic gas
 - Shallow thermal gas