Modern Aspects of Chemical EOR
Discover The Latest Technology and Best Practical Experience from Chemical EOR Expert

Date: 16th June 2014– 20th June 2014
Location: Kuala Lumpur, Malaysia

Petrosync Lecturer
Dr. James Sheng
Chemical EOR Expert

Associate professor at Texas Tech University, USA
Author of an EOR book which exclusively covers chemical EOR
Associate Editor for SPEREE, 2005 - 2009
Received the Outstanding Technical Editor Award, SPEREE, 2005

Major Chemical EOR Projects
- Conducted survey studies of chemical EOR projects in China
- Conducted survey studies of different EOR projects (thermal, foam, chemical, etc.)
- Company representative to follow EOR and other advanced R&D projects
- Expert user of chemical and other EOR simulators

Testimonials
“I learned a lot of field experience from Chinese projects which are not available in the English literature!”
“The instructor gave his insights of many controversial issues such as advantages and disadvantages ASP process!”
“This course had a good balance of theory and practice!”
“This course gave me confidence to carry out a challenging chemical EOR project!”
“Worth the time. Worth the cost!”

Supported by
Masterclass Overview

This course will provide comprehensive coverage of all chemical EOR processes. The course materials are based on the instructor's hands-on experience, personal collection of field cases and learning, especially from Chinese field practices where chemical EOR projects are mostly done. Although the focus will be on practical aspects, theories closely related to practical applications will be covered. It will include many quizzes, calculation exercises and simulation exercises for practice.

Each attendee must bring a laptop computer with Microsoft operating system.

Masterclass Objectives

- Understand each EOR mechanisms and the synergies of combined EOR methods
- Understand key parameters of each chemical process
- Have a good understanding of data range of key parameters
- Learn from practical experiences and case studies
- Know how to design, optimize and carry out a chemical EOR project
- Understand chemical EOR simulation
- Have a good knowledge that is not available in academic or scholar studies

Specially Designed for

The course is designed for professionals who want to know comprehensively how is the best practice in implementing chemical EOR projects
- Reservoir engineers
- Petroleum Engineers
- Chemist/Laboratory technicians
- Geologist
- Project engineers
- Project coordinators
- Project managers

Reservoir Engineering Training Courses (JANUARY - DECEMBER 2014)

<table>
<thead>
<tr>
<th>DATE</th>
<th>COURSE TITLE</th>
<th>INSTRUCTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>10th – 14th Mar</td>
<td>Mastering Gas Condensate &amp; Volatile Well Test Analysis</td>
<td>Alain Gringarten</td>
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<tr>
<td>23rd – 27th June</td>
<td>Waterflood Optimization</td>
<td>Deepankar Biswas</td>
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<tr>
<td>04th – 08th Aug</td>
<td>Applied Reservoir Engineering</td>
<td>Tarek Ahmed</td>
</tr>
<tr>
<td>18th – 22nd Aug</td>
<td>Practical Aspects of CO2-EOR Project Development</td>
<td>Ashok Singhal</td>
</tr>
<tr>
<td>08th – 12th Sep</td>
<td>Integrated Reservoir Characterization and Modelling</td>
<td>Hai Zui Meng</td>
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<tr>
<td>29th Sep – 03rd Oct</td>
<td>Advanced PVT &amp; EOS Fluid Characterization</td>
<td>Bahman Tohidi</td>
</tr>
<tr>
<td>17th – 21st Nov</td>
<td>Naturally Fractured Reservoir Characterization</td>
<td>Deepankar Biswas</td>
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DAY 1 & DAY 2

Day 1 begins with concepts about EOR such as incremental recovery and salinity. These are brief concepts to understand and select EOR methods.

Day 1 and Day 2 continue with polymer flooding. The key parameters of polymer flooding are polymer viscosity to improve mobility ratio, and permeability reduction to improve injection profile. Special cases will be discussed.

Introduction to Chemical EOR
- Organization of this course
- EOR Potential
- Status of Chemical EOR
- Performance evaluation of EOR processes
- Naming conventions and units
- Salinity – Exercise: Calculation of salinities

Polymer Flooding
- Types of polymers and polymer related systems
- Polymer viscosity
- Polymer flow behavior in porous media
  - Exercise: calculate polymer viscosity in porous media
- Displacement Mechanisms
- Survey results of polymer flooding projects
- Performance analysis by Hall plot
- Polymer mixing, well completion, injection and production
- Case study: pilot tests and field applications of polymer flooding
  - Case study: Polymer flooding experience and learning in China
- Exercises: list key parameters and their data in a polymer flooding model
- UTCHEM simulation practice – polymer flooding

DAY 3

Day 3 covers the chemical EOR process – surfactant flooding. To carry out a field project, we need to know what lab tests we need to do; we need to understand the parameters which are related to the reduction of residual oil saturation such as capillary number, IFT and capillary desaturation curve.

Surfactant Flooding
- Surfactants
- Types of Microemulsions
- What lab tests you need to do for a field project?
- Surfactant Phase Behavior and IFT
  - Exercise: Calculate phase behavior parameters from tube test data
- Viscosity of microemulsion
- Capillary number – Exercise: calculate typical waterflooding capillary number
- Capillary desaturation curve
- Relative permeabilities in surfactant flooding
- Surfactant retention
- Displacement mechanisms
  - Exercise: list key parameters and their data in a surfactant flooding model
- UTCHEM simulation practice – surfactant flooding
  - Case study: surfactant flooding
DAY 4

Day 4 first covers alkaline reactions, followed by combined methods. We focus on the important aspects of combined methods: their interactions and synergies. We will address some important questions such as why single alkaline flooding may not work well, why polymer is always needed.

Alkaline Flooding
- What alkalis should be used in alkaline flooding?
- Alkaline reactions
- How to simulate alkaline flooding?
- What typical simulation results will tell you?
- Recovery mechanisms
- Overall performance of alkaline projects
  - Exercise: functions of alkalis
  - Case study: alkaline flooding

Surfactant-Polymer Flooding (SP)
- Polymer-surfactant competitive adsorption
- Surfactant-polymer interaction and compatibility
- Optimization of surfactant-polymer injection schemes
  - Exercise: roles in SP flooding and design of polymer
  - Case study: SP flooding

Alkaline-Polymer Flooding
- How alkalis affect polymer solution?
- Synergy between alkali and polymer
  - Case study: alkaline-polymer flooding

Alkaline-Surfactant Flooding
- Why we need to combine alkali and surfactant?
- Synergy between alkali and surfactant
- pH Effect on surfactant adsorption
  - Exercise: roles of alkali in alkaline-surfactant flooding
  - Case study: alkaline-surfactant flooding

DAY 5

Day 5 summarizes advantages and disadvantages of each method and combined methods, and focuses on the problems with ASP which are much less discussed in the literature. We will discuss some practical issues and answer the questions from the attendees which will give the attendees an opportunity to make the best use of this course.

Alkaline-Surfactant-Polymer Flooding
- Interaction of ASP fluids and their compatibility
- Synergy of alkali, surfactant and polymer
- Emulsions in ASP flooding
- Amounts of chemicals injected in field ASP projects
  - Case study: Practical problems associated with ASP
  - Exercise: List the mechanisms of individual process and the combined process of ASP flooding
  - Case study: Examples of field pilots and applications

Screening Criteria for Chemical EOR Processes
- Exercise: Discuss the idea conditions for chemical EOR.
- Summary the current screening criteria

Special Issues from Course Participants
- Delegate’s Issues or further questions will be discussed in this session

IN-HOUSE SOLUTIONS

SAVE COST • IMPROVE PERFORMANCE • REDUCE RISK

PetroSync understands that in current economic climate, getting an excellent return on your training investment is critical for all our clients. This excellent training can be conducted exclusively for your organization. The training can be tailored to meet your specific needs at your preferred location and time. We will meet you anywhere around the globe.

If you like to know more about this excellent program, please contact Jerry Tay (Conference Director) on +65 6415 4502 or email jerry.t@petrosync.com
Dr. James Sheng is an associate professor in the petroleum department of Texas Tech University, USA. He has worked in the oil industry for 20+ years. While working in the industry for TOTAL, Baker Hughes, Shell, Kuwait Oil Company, Alberta Research Council, and China National Petroleum Company, James has developed his expertise in these areas: enhanced oil recovery, reservoir simulation and numerical modeling, well and formation testing, heavy oil recovery, reservoir management and production forecast.

He holds a Ph.D. degree from University of Alberta. He has (co)authored over 40 papers, and holds 4 US patents and 2 provisional US patents. He is the book author of “Modern Chemical Enhanced Oil Recovery”.


PROGRAM SCHEDULE

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>0800</td>
<td>Registration (Day1)</td>
</tr>
<tr>
<td>0900</td>
<td>Session I</td>
</tr>
<tr>
<td>11:00</td>
<td>Refreshment &amp; Networking Session I</td>
</tr>
<tr>
<td>11:15</td>
<td>Session II</td>
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<tr>
<td>13:00</td>
<td>Lunch</td>
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<tr>
<td>14:00</td>
<td>Session III</td>
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<tr>
<td>15:30</td>
<td>Refreshment &amp; Networking Session II</td>
</tr>
<tr>
<td>15:45</td>
<td>Session IV</td>
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<tr>
<td>17:00</td>
<td>End of Day</td>
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</tbody>
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Title: Modern Aspects of Chemical EOR
Date: 16th - 20th June 2014
Location: Kuala Lumpur, Malaysia

INVESTMENT PACKAGES

<table>
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<tr>
<th>Investment Package</th>
<th>Deadline</th>
<th>FULL MASTERCLASS</th>
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<tbody>
<tr>
<td>Standard Price</td>
<td>13th June 2014</td>
<td>SGD 5,995</td>
</tr>
<tr>
<td>Early Bird Offer</td>
<td>16th May 2014</td>
<td>SGD 5,795</td>
</tr>
<tr>
<td>Group Discount (3 or more Delegates)</td>
<td>13th June 2014</td>
<td>10% discount for groups of 3 registering from the same organization at the same time</td>
</tr>
</tbody>
</table>

* To enjoy the promotion & discount offer, payment must be made before deadline
* For 5 or more delegates, please inquire for more attractive package.
* Prices include lunches, refreshments and materials. Promotion & discount cannot be combined with other promotional offers.
* Important: Please note that registration without payment will incur a SGD 200 administration fee.

DELEGATES DETAILS

1st Delegate Name ___________________________  Mr  □  Mrs  □  Ms  □  Dr  □  Others  □
Direct Line Number: _________________________  Email: _________________________
Job Title: ___________________________  Department: ___________________________
Head of Department: _________________________

2nd Delegate Name ___________________________  Mr  □  Mrs  □  Ms  □  Dr  □  Others  □
Direct Line Number: _________________________  Email: _________________________
Job Title: ___________________________  Department: ___________________________
Head of Department: _________________________

3rd Delegate Name ___________________________  Mr  □  Mrs  □  Ms  □  Dr  □  Others  □
Direct Line Number: _________________________  Email: _________________________
Job Title: ___________________________  Department: ___________________________
Head of Department: _________________________

INVOICE DETAILS

Attention Invoice to: ________________________________________________________________
Direct Line Number: _________________________  Fax: _________________________
Company: ___________________________  Industry: _________________________
Address: ____________________________________________________________  Postcode: ___________
Country: ___________________________  Email: _________________________
Please note:  
- If you have already registered by Phone  □  Fax  □  Email  □  Web  □
- Please email us at registration@petrosync.com and inform us of any incorrect details. We will amend them accordingly.

PAYMENT METHODS

☐ By Credit Card :  Visa □  MasterCard □  AMEX  □  Security Code: _________________________
Card Number: ___________________________  Expiry Date: ___________________________
Name printed on card: ___________________________

☐ By Direct Transfer : Please quote invoice number(s) on remittance advice
PetroSync LLP Bank details:
Account Name: PetroSync LLP
Bank Number: 7144  □  Branch Code: 001 □  Account No: 010-2255-105
Name of Correspondent Bank : Standard Chartered Bank, 6 Battery Road, Singapore 049909
SWIFT Code of Correspondent Bank: SCBLSGSGXXX
All bank charges to be borne by payer. Please ensure that PetroSync LLP receives the full invoiced amount.

Confirmation

I agree to PetroSync’s terms & conditions, payment terms and cancellation policy.

Authorized Signature : ___________________________