

Accepted Abstracts

Oil & Gas 2018 *Petroleum Engineering 2018*



Joint Event
International Conference on
Petroleum Engineering, Oil and Gas
December 06-07, 2018 | Dubai, UAE

Petroleum Engineering, Oil and Gas

December 06 -07, 2018 | Dubai, UAE

Combustion efficiency, engine performance and toxic gas emissions linked to blends of petro-diesel and biodiesel

Avinash Pillay

Khalifa University of Science & Technology, UAE

Interest in biodiesel as a fuel additive has grown considerably and has become an essential part of global sustainable development. The physical and chemical properties of biodiesel affect combustion processes and can improve engine performance. Differences in biodiesel properties could lead to a distinction in fuel injection, fuel combustion, performance and emission features of the diesel engine. Certain features of engine emissions such as smoke opacity and noxious gases, CO, NO_x and SO₂ can be appreciably reduced by the use of specific

blended mixtures of biodiesel and petro-diesel. In addition particular physical properties such as biofuel density, viscosity and bulk modulus are associated with engine performance and gaseous emissions. Extensive research has been undertaken on the production of biodiesels from a variety of feedstock and the characteristics of biodiesels on engine performances and emissions have gained widespread attention and are the subject of this talk.

e: avinash.pillay@ku.ac.ae

Petroleum Engineering, Oil and Gas

December 06 -07, 2018 | Dubai, UAE

Possibilities of enhance oil recovery in tight carbonate reservoirs

Essa Lwisa

United Arab Emirates University, UAE

Over the years, CO₂ injection has become a leading EOR method, the method can significantly increase the oil recovery while at the same time reduces CO₂ emission. CO₂ is considered as an excellent fluid for enhanced oil recovery due to its favourable interaction with the reservoir oil. the oil recovery can be enhanced through miscible or immiscible displacement, interfacial tension reduction, light-hydrocarbons extraction, oil swelling, oil viscosity reduction. However, the main disadvantage is the relative low density and viscosity of CO₂ compared to reservoir oil which usually results in gravity tonguing and viscous fingering and poor sweep efficiency, another schemes of injection can be used to eliminate these problems, are alternating (WAG) or simultaneous injection of CO₂ and water (SWAG) instead of continuous CO₂ flood.

An alternative, more efficient CO₂ injection scheme is carbonated (CO₂-enriched) water injection. A fluid consists of CO₂ dissolved in water will be flooded into the reservoir. In this scheme a larger amount of CO₂ can be used and dissolved in water without the

risk of leakage of CO₂ through cap rock in comparison to the conventional schemes. The flooded fluid will have an acidic effect on the formation, dissolving tight pores thus, increasing the permeability. Also, it results in significant oil swelling, reduces the gravity segregation and gas fingering and improves the sweep efficiency, hence a higher incremental oil recovery is obtained.

The main objective of this research/study is to experimentally examine the oil recovery performance of carbonated water under various operating conditions. First, several carbonate reservoir rock samples will be characterized in terms of pore volume, porosity and grain density by saturating the samples with formation water. Second, the initial liquid permeability for the samples will be measured. Third, preparing the carbonated water and measuring its properties. Lastly, flooding the samples with carbonated water at various flow rate and measuring liquid permeability at each rate to verify the best flow rate.

e: essa.lwisa@uaeu.ac.ae*Notes:*

Petroleum Engineering, Oil and Gas

December 06 -07, 2018 | Dubai, UAE

CFD modelling of the fluid behaviour in oil wells

Abdualmagid Algadi

Energy, Emissions and the Environment Research Group, United Kingdom

Computational Fluid Dynamics (CFD) can be used to analyse the fluid behaviour in oil wells, where the CFD allows conducting three-dimensional (3D) simulations of interpenetrating or immiscible fluids that comprise impacts of pressure, temperature and fluid mass transfer in detail. Recently, the CFD is used to more varied challenges such as sand transport, coupled mechanical modelling of failing wellbores and gas well clean-up. CFD has been utilized to model the crushed area around perforation tunnels and as well to predict good performance based on laboratory testing. Where the reservoir is involved in these models they are fully coupled and flow has enabled deep in the reservoir and in to each point along the well.

Capturing the simultaneous flow of fluids in the reservoir and in the well is fundamental, to predict performance in wells and reservoirs with complicated geometry. Further advances that assist sand failure and sand transport to be modelled are also illustrated. The case is employed for use of CFD or similar modelling processes where complicated wells or complicated reservoirs have considered. CFD modelling for the oil and gas sector providing informed analysis of the data that can assist designers and operators solve flow issues, extend life of flow lines and ensure the efficient delivery of the product.

e: Abdualmagid.Algadi@hud.ac.uk*Notes:*

Petroleum Engineering, Oil and Gas

December 06 -07, 2018 | Dubai, UAE

A novel thermochemical model for nano materials and its applications in the petroleum industry

M R Islam

Emertec R&D Ltd., Canada

Information age marks revolutionary changes in all aspects, but most notably in the domain of nanotechnology. The technological revolution involves Nano materials, engineered or otherwise, that have great mechanical stability, high thermal conductivity, large current carrying ability, and tremendous flexibility in terms of compatibility with other materials. Because all mathematical models of Nano materials use the same theories (ranging from sub-atomic to macro- through molecular scale), conflicting predictions of macroscopic properties of Nano materials emerge. These contradictions have been dealt with dogmatic alterations of the governing equations, often with problematic scientific explanation. However, in this paper such contradictions are erased by starting with theories that do not invoke spurious assumptions. Spurious assumptions are removed at a fundamental level, thereby making atomic structure models consistent with macroscopic models. An immediate outcome of this approach is the elimination of two different governing equations for mass and energy balance. Consequently, there is no longer a requirement to characterize forces as gravitational, electromagnetic, and nuclear. Also

rendered redundant are the concepts of molecular forces, lattice energy and its relations to properties of solid, dipole-dipole forces, London dispersion forces, van der Waal's forces, bonds, and others. By using a consistent model throughout, the need to have these notions as well as quantum mechanical narration through perturbation theory, super molecular modeling and others is avoided. The resulting model describes properties of both conventional metals and others, including semiconductors. Because the entire memory of a material is considered distinctly different features emerge for materials subject to Nano-engineering. The model is useful for material characterization as well as for evaluating long-term sustainability. This fundamental modeling approach on technology development leads to the development of an array of new technologies that can have great impacts in the future. These technologies are sustainable and serve as a basis of sustainable oil and gas development. This model provides one with a guideline to study long-term sustainability of novel materials, thereby enacting a protocol for developing sustainable Nano materials.

e: president@emertec.ca

*Notes:*

Petroleum Engineering, Oil and Gas

December 06 -07, 2018 | Dubai, UAE

Efficient use of cesspool and biogas for sustainable energy generation: Recent development and perspectives

Abdeen Omer

Energy Research Institute (ERI), United Kingdom

Biogas from biomass appears to have potential as an alternative energy source, which is potentially rich in biomass resources. This is an overview of some salient points and perspectives of biogas technology. The current literature is reviewed regarding the ecological, social, cultural and economic impacts of biogas technology. This article gives an overview of present and future use of biomass as an industrial feedstock for

production of fuels, chemicals and other materials. However, to be truly competitive in an open market situation, higher value products are required. Results suggest that biogas technology must be encouraged, promoted, invested, implemented, and demonstrated, but especially in remote rural areas.

e: abdeenomer2@yahoo.co.uk

Petroleum Engineering, Oil and Gas

December 06 -07, 2018 | Dubai, UAE

Minimizing gas flaring and enhancing condensate recovery from gas condensate reservoirs through gas injection

Abdollah Esmaeili

Cyprus International University, Cyprus

Gas reservoirs can be classified into dry gas reservoirs, wet gas reservoirs and gas condensate reservoirs. In gas condensate reservoirs, the reservoir temperature lies between the critical temperature and the cricondentherm. The gas will drop out liquid by retrograde condensation in the reservoir, when the pressure falls below the dew point. This heavy part of the gas has found many application in industry and also in daily life and by remaining in reservoir not only this valuable liquid is lost but also its accumulation will result in forming a condensate bank near the well bore region which makes a considerable reduction in well productivity.

In this paper, gas injection will be studied in a gas condensate reservoir to increase the recovery factor moreover the capability of different injection gases (CO_2 , N_2 , CH_4 and separator gas) will be compared through different injection schemes. The injection schemes which will be considered are: different injection rates, different injection pressures and different injection durations. We think that the response

of the reservoir in different cases will be different but that injection of all of them can increase the condensate recovery. As many parameters can affect the decision of selecting the injection scheme, other than the gas and condensate recovery factor, doing an economical evaluation is inevitable to take them all into account and determine the best one.

In this paper, the efficiency of different schemes of gas injection and gas recycling in condensate recovery from a gas condensate reservoir, through compositional simulation has been studied and compared. The effect of changing injection rate, injection pressure and injection duration has been investigated by three injection gases (N_2 , CO_2 , CH_4) and gas recycling. The appropriate and optimum case can be selected considering the results of the simulation work and doing an economical evaluation, taking into account all the parameters such as: the price of the gas and condensate, the price of the injection gases and the cost of the facilities needed in each scheme with regard to the present level.

e: esmailyabdollah@gmail.com*Notes:*

Petroleum Engineering, Oil and Gas

December 06 -07, 2018 | Dubai, UAE

Comparison of stimulation techniques and production methods used in unconventional reservoirs in Cherokee Basin, Kansas And Oklahoma, USA

Steven A Tedesco
Energid Energy, USA

Coalbed methane and carbonaceous mudstone reservoirs require unique drilling and completion methods to minimize reservoir damage and achieve optimal production. Determining successful drilling and completion techniques for unconventional reservoirs tends to be a long-term process that is based on more trial and error. Which particular drilling or completion method will be optimal may not be known for years after production has begun from an area. Despite the success or failure of a particular completion method(s) used, there are geologic and reservoir characteristics that may be unknown initially that can have an adverse or positive effect on production. In 2008 over 7,000 wells were producing from coals and carbonaceous mudstones for the Cherokee Basin (Figure 1). In 2008 more than 1,000 wells were awaiting completion or connection to a gathering system. In that same year, drilling and completions began to slow due to the collapse in gas prices. By 2009, coal bed methane drilling activity completely ceased in the Cherokee Basin. The reservoirs are characterized by low volumes of produced water and production decline

curves similar to conventional gas reservoirs. Drilling for new coalbed methane and shale gas reservoirs post-2010 is almost non-existent. The types of completion methods used can be categorized in to single zone or up to 7 zone completions. The number of fracture stimulations can be further characterized by single zone fracture stimulation to multiple zone fracture stimulation. Specific coals and carbonaceous shales were consistently gas productive whereas other zones were not. The data is impacted by drilling methods used, location of the reservoirs in the basin, water data, completion methods, and understanding rock properties and compare to actual production. This paper will present integration of production and completion data with general geologic data determines: 1) the optimal completion technique (s); 2) specific coals and carbonaceous shales are more productive; 3) the median decline production profile; 4) optimal areas in which to find production; and 5) how can production rates and total volumes be improved.

e: Steve@energidenergy.com

Petroleum Engineering, Oil and Gas

December 06 -07, 2018 | Dubai, UAE

Biological treatment of oil spill in Iraqi soil

Hussein Al Nasrawi

Southern Technical University, Iraq

The present study was conducted to identify isolation of fungi from soil polluted with oil spill from southern area of Iraq. Three species of fungi were isolated from polluted soil, the fungi belongs to: *Aspergillus niger*, *Fusarium sp.* and *Penicillium sp.* Only *A.niger* shows biodegradation ability of crude oil in liquid medium, in addition to test two white rot fungi *Agaricus bisporus* and *Pleurotus ostreatus*. Results revealed that 80% of hydrocarbons PAHs was biodegraded by *A.niger* under 25 °C and 75% in 20 and 30 °C. whereas *Agaricus bisporus* and

Pleurotus ostreatus biodegraded 55% and 50% PAHs under 25 °C and 20,30 °C respectively. Diameter of *A.niger* colony revealed 90 mm. Growth in PA medium enriched with 1% crude oil. The percentage of PAHs degraded by *Agaricus bisporus* and *Pleurotus ostreatus* was 90% in succession with *A.niger* and C/N ratio decreased from 20.5:1 to 18.5:1 in addition to advance of soil biological properties after treatment of soil by white rot fungi.

e: halnasrawi2@hotmail.com

Petroleum Engineering, Oil and Gas

December 06 -07, 2018 | Dubai, UAE

Property enhancement of mandrel for SET Applications

Sayyad Zahid Qamar

Sultan Qaboos University, Oman

For more than a decade, solid expandable tubular (SET) technology has been used for both completion and production purposes in oil and gas wells. SET helps to increase fracturing rates, thus resulting in improved conductivity and superior hydrocarbon production. Expandable tubulars have also proved their value as an alternative to conventional zonal isolation techniques. SET technology is built around the cold expansion of a tubular by forcing through it a conical mandrel made from a special tool steel. Good design and manufacturing cannot be achieved without indepth knowledge of the mechanical properties of the cone material. A test rig has been designed, fabricated, and commissioned at the Sultan Qaboos University for full-scale expansion tests of SETs. This facility

uses expansion cones made from AISI D6 steel, which is a high-carbon high chromium cold-work tool steel. Published work on D6 steel is mostly focused on surface hardening methods and wear related issues, rather than heat treatment. Work reported in this paper is based on devising an optimum heat treatment strategy for property enhancement of expansion cone material. The heat treatment process consists of annealing, hardening/quenching, followed by single and double tempering. Mechanical testing includes hardness, tensile properties (yield strength, ultimate strength, and ductility), and impact strength. Optimum material properties would ensure dimensional accuracy of the expanded tubulars and a longer mandrel life.

e: sayyad@squ.edu.om

*Notes:*

Petroleum Engineering, Oil and Gas

December 06 -07, 2018 | Dubai, UAE

Modelling of chemical water shut-off treatments

Forat Mohamed Abdelmonim Mohamednour
Shahid Beheshti University, Iran

Water production is one of the major problems in oil industry, which may cause corrosion of tubular, fine migration and accelerate well abandonment. Every year more than \$40 billion is spent dealing with unwanted water, so a treatment should be applied in order to reduce high water production. Many papers investigated and focused their researches on how to reduce water cut percentage. Mechanical and chemical treatments are suggested, chemical treatment represented in polymer-gel with cross linker solution proved an optimistic results. Gel can solve many types of water production problems rather than other chemical or other mechanical treatments. In this project a model constructed to determine applicability of gels in reducing water

permeability. The model included equations predicted using statistic software (SPSS) that determine F_{rw} (Water residual resistance factor) and F_{ro} (Oil residual resistance factor) by inserting polymer concentration then determine the optimum concentration which gives the most desired results. A real field data obtained from Z field (well X, well Y, and Well Z) and gel applicability in permeability reduction had been tested, then an optimistic result obtained. According to this study there is a great chance to apply polymer-gel as water shut-off technique. For future work a core flooding study must be constructed to obtain more set of data and improve equations accuracy.

e: foratabdelmonim95@gmail.com

Petroleum Engineering, Oil and Gas

December 06 -07, 2018 | Dubai, UAE

A novel approach for formulating CO₂ foam based fracturing fluid by synthesized grafting copolymerization to enhance its stability for HPHT shale reservoirs

Sahil Chaudhary
DIT University, India

An eco-friendly CO₂ foam based fracturing fluid is developed which can be used at HPHT conditions for shale reservoirs with high goethite content. Results observed were compared to the conventional fracturing fluids which were previously published.

For the formulation of the fracturing fluid, gum acacia and Lactic Acid is grafted together in the presence of Potassium per sulphate (KPS). Base solution of the fracturing fluid is prepared using 80% of CO₂ liquid and 14% brine solution. Lecithin is used to emulsify CO₂ liquid and brine solution. Grafted polymer is mixed with the base solution. An Propylene glycol, oxygen scavenger, biocide, cross linker and other additives has been added in smaller proportions nearly 0.15% in the base fluid. Sodium Lauryl Sulphate and Palmitic acid is added in the base solution as foaming agent. After mixing the formulation at high rate for 10-15 minutes, 4-5% proppant is added in the developed fracking fluid.

The series of test has been conducted and the results are compared with the conventional fracking fluid. FTIR has been used for the characterization of grafted Copolymer and the effective synthesized co-polymerization is shown by the Infrared spectra of gum acacia (GA), Lactic acid (LA) and grafted copolymer (GA-g-LA). Rheological properties have been

evaluated of the base gel and foam separately. In this paper, the viscosity of grafted copolymer polymer fracturing foam at high pressure high temperature (HPHT) as a function of surfactant concentration, salinity, and shear rate are presented. Pressurized foam rheometer was used to find out the viscosity of CO₂ foam at different surfactant concentrations (0.25–1 wt%) and salinity (0.5–8 wt%) over a wide range of shear rate (10–500 s⁻¹) at 1500–3000 psi and 200–400 °F. The viscosity is found between 70–125 cP at for different concentrations. The foam quality has been evaluated by adding 0.25% w, 0.5%w and 1%w of surfactants. Half-life and proppant carrying capacity of the best quality foam been determined at different temperature ranges. Half-life time was found to be 145 minutes at 250°F. The results of effect of salinity and effect of shear rate have been discussed in detail. The result showed that at foam quality of 80% & 70% proppant loading is 5.5%vol and 3%vol. Use of grafted copolymer results in higher viscosity and proppant carrying capacity which is beneficial for HPHT fracturing conditions.

The use of grafted copolymer enhanced the properties of fracturing fluid. GA-g-LA is a novel approach and has not been used in well stimulation industry. Grafting increased the stability of fracturing fluid at HPHT wells. This could be brought in practice in the coming time and can be used in deep wells.

e: sahilchaudhary617@gmail.com

 Notes:

Petroleum Engineering, Oil and Gas

December 06 -07, 2018 | Dubai, UAE

Analyzing effects of acidic surface modified multi-wall carbon nanotubes, large size Multi-Wall Carbon Nanotubes, Polyethylene Glycol (PEG) and surfactants on performance of Water Based Mud (WBM)

Koorosh Tookallo

Islamic Azad University, Iran

Due to the significance and unique properties of Multi-Wall Carbon Nanotubes (MWCNT), in the present investigation, the viability of these materials in the water-based mud (WBM) is assessed. The impacts of various kinds of MWCNT, mud additives and surfactants on the rheological properties, water loss and drilling fluid stability of the WBM are experimentally investigated. The results have demonstrated various kinds of MWCNT, additives, and surfactants have affected the rheological properties of the WBM. Acidic surface modified carbon nanotube improves rheological properties of the WBM

such as increases the quantity of plastic viscosity, yield point and water loss of the sample and increases the shale recovery. In the presence of Polyethylene Glycol (PEG), Acidic surface modified carbon nanotube increases the plastic viscosity and yield point of the sample more than PCNT and Greater Not Modified Carbon Nanotube (MCNT) all in all, the presence of Multi-Wall Carbon Nanotubes increases the efficiency of polymers and improves the rheological properties and performance of the water base mud.

e: Koorosh2kalloo@yahoo.com

Petroleum Engineering, Oil and Gas

December 06 -07, 2018 | Dubai, UAE

Seismo electric bio availability fractal dimension for characterizing Shajara reservoirs of the Permo – Carboniferous Shajara Formation, Saudi Arabia

Khalid Elyas Mohamed Elameen Alkhidir

King Saud University, Saudi Arabia

The quality and assessment of a reservoir can be documented in details by the application of seismo electric bio availability. This research aims to calculate fractal dimension from the relationship among seismo electric bio availability, maximum seismo electric bio availability and wetting phase saturation and to approve it by the fractal dimension derived from the relationship among capillary pressure and wetting phase saturation. In this research, porosity was measured on real collected sandstone samples and permeability was calculated theoretically from capillary pressure profile measured by mercury intrusion contaminating the pores of sandstone samples in consideration. Two equations for calculating the fractal dimensions have been employed. The first one describes the functional relationship between wetting phase saturation, seismo electric bio availability, maximum seismo electric bio availability and fractal dimension. The second equation implies to the wetting phase saturation as a function of capillary pressure and the fractal dimension. Two procedures

for obtaining the fractal dimension have been utilized. The first procedure was done by plotting the logarithm of the ratio between seismo electric bio availability and maximum seismo electric bio availability versus logarithm wetting phase saturation. The slope of the first procedure = $3 - D_f$ (fractal dimension). The second procedure for obtaining the fractal dimension was determined by plotting the logarithm of capillary pressure versus the logarithm of wetting phase saturation. The slope of the second procedure = $D_f - 3$. On the basis of the obtained results of the fabricated stratigraphic column and the attained values of the fractal dimension, the sandstones of the Shajara reservoirs of the Shajara Formation were divided here into three units. The obtained units from bottom to top are: Lower, Middle and Upper Shajara seismo electric bio availability Fractal Dimension Units. It was found that fractal dimension increases with increasing grain size and permeability.

e: kalkhidir@ksu.edu.sa

Petroleum Engineering, Oil and Gas

December 06 -07, 2018 | Dubai, UAE

Formidable approach to reduce sea pollution caused by heterogeneous hydrocarbons

Seema Dhail

Research Scientist at Istituto di Chimica Biomolecolare, Italy

Sea pollution by introducing heterogeneous hydrocarbons due to human pursuit and accidental leakages during ship operations created drastic environmental issues all over the world. Although different synthetic methods are used to abate such pollution, but simultaneously it is affecting environment in distinct way. Using biosurfactants is one of the leading techniques for managing diverse pollution caused by heterogeneous hydrocarbons. Biosurfactants are surface active molecules synthesized by microorganisms. Due to various dominance over synthetically produce surfactant, the demand for biosurfactants has been increasing rapidly to replace their chemically synthesized counterparts. In present study, isolation

and identification of biosurfactant producing bacteria were assessed from oil-spilled area of Arabian Sea, Mumbai (INDIA). To confirm the ability of isolates in Biosurfactant production, various biosurfactant activity assay tests were performed. Biosurfactants produced by some marine microorganisms have been paid more attention, particularly for the bioremediation of the sea, polluted by crude oil. Among all of the isolated strains, strain 1 (*Bacillus* sp.) exhibit the elevated biosurfactant activity. The isolated culture filtrate was found to be highly effective in microbial enhanced oil recovery (MEOR) using sand pack method.

e: seemaresearch21@gmail.com

*Notes:*

Petroleum Engineering, Oil and Gas

December 06 -07, 2018 | Dubai, UAE

Sustainable oil industry development with carbon-constrained economies: Challenges and opportunities

Hussein Hoteit

King Abdullah University of Science and Technology, Saudi Arabia

The ongoing accumulation of greenhouse gas (GHG) concentrations in the atmosphere from various anthropogenic sources is believed to be the primary cause of the increase in the global temperature of the Earth's surface. Carbon dioxide is the most significant GHG where electricity generation with other stationary industry sectors powered by fossil fuels are the top anthropogenic sources of CO₂ emissions. Among other technologies, Carbon Capture and Storage (CCS) in geologic formations including hydrocarbon fields is expected to play a key role in addressing the GHG challenge. In this talk, we

review the current CO₂-EOR field implementations worldwide including injectivity rates and oil incremental contributions. We highlight the potential of the CO₂-EOR technology in enhancing oil recovery and in its contribution for CO₂ emission reduction. The main challenges of the CCS technology are then discussed where we show some technical challenges related to CO₂ capture, transportation, injection, and displacement in hydrocarbon fields. We close with some thoughts regarding the role of the Oil industry in promoting CCS as a win-win technology.

e: hussein.hoteit@kaust.edu.sa

Petroleum Engineering, Oil and Gas

December 06 -07, 2018 | Dubai, UAE

Challenge in operation of Bontang LNG plant due to lean gas entrance

Ferri Yohannes and Danu Purwanugraha

PT Badak NGL, Indonesia

Bontang Liquefied Natural Gas (LNG) Plant is one of the largest LNG facilities having a capability to produce up to 22.5 Million Tons Per Annum (MTPA) LNG and 1 MTPA Liquefied Petroleum Gas (LPG). It has been operated for more than 40 years in the most excellent practice. Starting 29 May 2017, Bontang LNG Plant receives new feed gas supply which contains lean composition (97% methane content) and causes the overall feed gas composition to Bontang LNG Plant become leaner than the original design (methane content approximately 83%). The entry of leaner feed gas to Bontang LNG plant presented operational issues both commercially and technically such as lower LNG quality (HHV), heavy hydrocarbon carry over, lower fractionation turndown ratio, and potential un-absorb gas. This

paper explains 3 key plant operational strategies that have been selected in Bontang LNG Plant to accommodate leaner feed gas supply,

1. Upstream feed gas delivery strategy;
2. Plant modification and operating procedure improvements
3. Dual LNG HHV production: LNG Plant can produce both lean and rich LNG products simultaneously. Implementation of these strategies have been successfully performed and provide plant operating flexibility for new gas producers and maintain Indonesia's position in the very competitive LNG business.

e: ferri@badaklng.co.id, danu@badaklng.co.id

*Notes:*

Petroleum Engineering, Oil and Gas

December 06 -07, 2018 | Dubai, UAE

Self-healing smart anti-corrosion coatings based on polymers and functionalized carbon particles

Ahmad Tabish

Khalifa university of science and technology research center, UAE

The issue of corrosion is a well-known problem and it causes the weakening of metal and its properties and makes it unfit for use. Corrosion causes enormous economic losses consistently over years in equipment maintenance, repair, and its substitution. In Gulf Cooperation Council (G.C.C) countries, money spent into corrosion control and repair are extremely dependent on production of oil, refining and petrochemicals sector shall be noteworthy as it comprises more than 33% of gross domestic products. Until now, various coatings have been developed to tackle this problem like sacrificial coatings, barrier coatings, noble metal coatings and electrically resistive coatings. In this study, self-healing smart anti-corrosion coatings were synthesized as it is a much lesser investigated area of research. Functionalized particles from meso porous carbon along with meso porous silica etc. were used as Nano containers for encapsulation of corrosion inhibitor for self-healing purpose using layer-by layer (lbl) self-assembly method and their effect on performance of coatings were studied after adding in commercially available polymer matrix against the corrosion of mild carbon steel in seawater. A series of tests were conducted on the resultant coatings to investigate their corrosion resistance, self-healing performance etc. This study will evaluate the protection offered by coatings of commercially available porous materials against the corrosion of mild steel in seawater, along with addition of different encapsulated nano containers in the polymer matrix. Benzotriazole (BTA) was used as a corrosion inhibitor in this study for synthesizing Nano containers. Self-healing smart anti-corrosion coatings, is a much lesser explored area of research with the major challenge of low adhesion properties and release of Nano containers to heal the corroded metal substrate. This calls for preparation of substrate surface and treatment of coatings to establish good interfacial interaction of the nano containers with the porous material and their successful release in the medium upon a pH change to avoid delamination/corrosion of coatings in water. The potential of the functionalized carbon materials to further enhance anticorrosion performance of the self-healing coatings was also evaluated. The coatings were prepared by brush coatings as well as dip-coating methods in determined optimal conditions on clean polished mild carbon steel coupons. The coating degradation behaviour and corrosion resistance was investigated by the immersion tests (performed in 3.5 wt. % sodium chloride solution) and Potentiostatic Electrochemical

Impedance Spectroscopy (PEIS). Brunauer–Emmett–Teller (BET) testing was done only initially in order to determine the degree of impregnation in the pores of the carbon and silica materials. Corrosion monitoring was performed using Linear Polarization (LP) technique. Other nano capsules characteristics were studied using techniques such as Fourier Transform Infrared Spectroscopy (FTIR), X Ray Diffraction (XRD) was used to characterize the composition of the multilayers of the Nano capsules, Scanning Electron Microscopy (SEM) and Transmission Electron Microscopy (TEM) were used to analyze the surface morphology of coatings as well as nano capsules. The visual appearance of coating and corrosion products was studied using Optical Microscopy (OM). Coating thickness measurements were done using a standard PosiTector gauge. Zeta Potential was also analyzed continuously during the synthesis of nano capsules in order to optimize the layer-by-layer assembly of a self-healing coating. Ultraviolet–visible spectroscopy (UV-Vis) was also studied to analyze the release behavior of the synthesized Corrosion Inhibitor encapsulated Nano containers in different pH of water. Self-healing testing of the synthesized coatings based on ASTM D7027-13 standards was also carried out to analyze the coating performance when exposed to corroding conditions.

The electrochemical impedance spectroscopy (EIS) results illustrated the improved corrosion resistance of the coating based on carbon materials. The proposed coating also had a rapid self-healing ability in the presence of water. The meso porous carbon based coatings produced, were highly stable and protective in nature. The self-healing coatings possessed high impedance good barrier characteristics. The meso porous carbon and functionalized meso porous carbon coatings were compared with coatings of meso porous silica and commercially available vinyl acrylate. The SEM analysis also revealed successful release of BTA onto the corroded surface thus verifying the self-healing effect. UV-Vis predicted that the carbon based capsules had more impregnation of the corrosion inhibitor than the silica based nano containers. It was observed that carbon based coatings and its 5 wt. % composition in the polymer matrix had better anticorrosive performance and adhesion than the silica coatings and provided much greater substrate protection as explained in the work in detail.

e: ahmad.tabish@ku.ac.ae

Petroleum Engineering, Oil and Gas

December 06 -07, 2018 | Dubai, UAE

Oil-price challenges and its effect on future oil-gas projects

Hussain Ahmed

Southern Oil Company, Australia

In recent years crude oil price have been changed from rapidly impacts its production of petroleum products downstream. As a result of hike in petroleum products, consumer commodities and all other price can increase which depends by petroleum. Oil is very important to generate electricity and industrial purpose. Demand for crude oil is very high in non OPEC countries like India, china due to the growing consumption. Because of volatility in oil prices the country can affect economically, transportation price increase leads increase in commodities, the industrial raw materials and regular essential process happening on daily basis. The industrially developed countries have huge demand on oil. However, the volatility of crude oil price is because of many reasons, some of the most common reasons were demand and process technology. The hike of crude oil price may have impact of development of existing and newly discovered oilfields in terms of asset management. OPEC (the Organization of Petroleum Exporting Countries) has greater influence in crude oil price.

Demand of crude oil is increasing all over the world; demand mainly depends on the factors of population, economic, industrial needs of the country. Alternative source of energy such as coal, nuclear power generation, solar are more expensive, this leads to demand in crude oil. For instance, crude oil consumption in India and united states and top most consumers is higher due to their industrial usage and more number of consumers. Most of the oil consumers in the list are not belonging to OPEC. Transportation sector is becoming the largest among industrial, residential and commercial sectors, which has increase the demand for crude oil in recent years. Vehicles used for personal purpose made by combustion engines have increase the growth of demand in petroleum. The demand of crude oil in 2010 is 86.0 million barrel per day but it has been increased to 96.0 million per day in 2017. International energy agency expecting the growth of demand in Asian and developing countries will be increase.

e: hussain1755@yahoo.co.uk

Petroleum Engineering, Oil and Gas

December 06 -07, 2018 | Dubai, UAE

Production reassignment and reserves distribution on a giant shared reservoir

Jorge Barboza

VYP Consultores SA, Argentina

On the conventional scheme of the oil industry, exploitation concessions are granted by areas delimited on the surface but at the subsoil level they often fail to cover the entire volume of the reservoir, even more in large deposits, consequently the reservoir spread underground through various concession areas and it is therefore managed by multiple operators, under this situation the accumulation is known as shared reservoir. On a shared reservoir original oil in place and reserves estimation are made according to the volume of the reservoir contained within the concession, however oil production does not obey limits or estimations, because oil will move freely to zones of greater drainage, this means that throughout the productive life of a shared reservoir the recoveries for each operator can be very different from the estimates or assigned reserves, resulting

in a beneficial situation to one operator and negatively affecting another. This document describes and deals with a review of reserves made on a giant oil reservoir managed by two operators but with preferential drainage to one area, in which cumulative oil production differs greatly from the recoverable volumes calculated for each concession area, creating a complex reserve estimation scenario due to the impossibility of performing a conventional calculation for the remaining volumes available for each operator. To solve this situation a methodology was applied to reallocate the cumulative production between the two areas and a distribution of the remaining reserves was achieved based on production history and forecasts, resulting satisfactory for both parties.

e: barbozajh@gmail.com

*Notes:*

Petroleum Engineering, Oil and Gas

December 06 -07, 2018 | Dubai, UAE

A legal study on the term of observance of environmental considerations in international oil and gas contracts, focusing on new Iranian Petroleum Contracts (IPC)

Ehsan Sarkhosh

Imam Sadiq University, Iran

The right to have a healthy environment is one of the fundamental rights of humanity and nowadays, the necessity to ensure the exercise of this right is felt more than ever. In this regard, exploration, development and operation contracts of oil and gas are important because of the extent of damages that these operations cause to the environment. In addition, a considerable part of the world's oil and gas reserves is located in developing countries, which most of them do not have the necessary legal regimes to apply international standards. In this article, we study the different environmental clauses contained in various oil and gas contract patterns, including the new generation of Iranian Petroleum Contracts. In this regard, when we study older contracts it is understood that the environment issue has not been considered appropriately and it is since the middle of the twentieth century that the terms and conditions about protecting the environment are gradually inserted in these contracts. However, most of these

terms are often too general and sometimes vague; in addition in most cases there are no specific responsibilities for those who violate these provisions. The present study is conducted based on the analysis of content of international oil and gas contracts and related provisions. The purpose of this article is to study the strategies available in international contracts, to analyze the current situation of relevant provisions in Iran, and finally to provide appropriate and efficient solutions about environmental issues in light of the current status of oil and gas fields. According to the results of this paper, it is imperative that countries which have oil, including the Islamic Republic of Iran, in addition to drafting laws and regulations for monitoring and controlling oil operations, shall provide a comprehensive monitoring system for the implementation of environmental conditions.

e: sarkhosh313@yahoo.com

Joint Event

International Conference on

Petroleum Engineering, Oil and Gas

December 06 -07, 2018 | Dubai, UAE

Microalgae to energy

Olapade Olushola

University of Lisbon, Italy

Microalgae, an autotrophic microorganism with rich nutrition and high photosynthetic utilization degree, which are widely living in the sea and land. Microalgae can be converted into bio energy such as biogas, biodiesel and bio oil. As a result, high lipid content, less cultivated land use and short life time circle are thought to be the typical advantages of microalgae that it can be considered as a potential substitute of fossil fuel. This thesis presents in review on the different

cultivation methods and energy conversion techniques of microalgae. Through comparison with other biomass feed stocks, the advantages and disadvantages of microalgae are detailed. The extraction of lipids from microalgae to make biofuel through trans esterification, and the conversion of microalgae to bio oil through pyrolysis are carefully enumerated.

e: olusolatomy@yahoo.com



Notes: