



# Dr. Syed M. Tariq

Professor on PPL Chair,  
Department of Petroleum Engineering,  
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**Dr. Syed Tariq** is currently Professor on PPL Chair, Dept of Petroleum Engineering, NED University of Engineering & Technology. He earned a Ph. D. in Petroleum Engineering from Stanford University in 1977. Dr. Tariq is a senior member of the Society of Petroleum Engineers and has been an active participant in its activities since 1973. He served as SPE Distinguished Lecturer in 1987, as Technical Editor of the SPE Journal from 1985-1994 and Director of SPE's Qatar section from 2003 – 2006. He has contributed to oilfield technology with over 50 technical papers, SPE's monograph on Oilfield Perforating Technology and US patents. He earned the 'Advanced Professional Skills Award' from ExxonMobil Corporation in November, 2015 for his services to advance the engineering profession in ExxonMobil.

Dr. Tariq retired from ExxonMobil in 2016 after 40 years of service in the upstream oil and gas industry both in the US and overseas. During his career, he managed the largest gas field in the world (North Field, Qatar) in support of the mega LNG projects. Later on, he also managed one of the largest oil fields in the world (Upper Zakum field, Offshore Abu Dhabi). He has experience of implementing ExxonMobil's EOR projects in USA, West Africa and Middle East. His current interests include: Reservoir flow processes, EOR, Evaluation and Appraisal of Unconventional resources, Reservoir Management & Surveillance and Flow Assurance.

## *“EOR for Unconventional Resources: Current Ideas, Understanding of Physical Phenomena and Realistic Future Prospects”*

### *Abstract*

During last few years, numerous studies have been conducted on various aspects of EOR in Unconventional reservoirs and a large volume of material has been presented in technical literature by academia and researchers. Most of these studies have been lab work on core samples and numerical simulation. However, a clear understanding of underlying physical phenomena is still lacking and the subject is shrouded in mystery. Only few field pilot results have been reported in EagleFord, Bakken and Permian basin by EOG, Occidental, Liberty Resources, Marathon and Hess. Operators with successful field applications (e.g. EOG) have not published their techniques.

In this presentation, an overview of the general EOR concepts, current ideas and shortcomings will be presented and suggestions will be made to clarify the confusion regarding Unconventional EOR:

- 1) Only viable Unconventional EOR techniques are: Gas injection (CO<sub>2</sub>, rich NG), Surfactants and Low salinity WF. However, of these, only Gas Injection (CO<sub>2</sub> and rich NG) appear to be viable and that also only in Huff and Puff mode
- 2) There is utter lack of understanding on what physical processes are involved in EOR in unconventional reservoirs. e.g. for CO<sub>2</sub> Huff and Puff, MMP doesn't appear to be an important factor in field tests
- 3) For large scale application of EOR for unconventional resources, it is necessary to reduce the prevalent uncertainty and put the EOR technology on firm technical footings by identifying key physical phenomena and quantifying the results through field pilots.

**Thursday, September 19<sup>th</sup>**

**11:00 – 11:50AM | 368 Ritchie Hall**