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LECTURERSM



**Using Downhole Fiber Optic Temperature
Sensing Technology to Monitor, Control
and Improve Well Performance**

**Society of Petroleum Engineers
Distinguished Lecturer 2018-19
Lecture Season**

Dr. Ding Zhu

Professor at Petroleum Engineering Department at Texas A&M University, USA



Erbil Section



(PREVIOUSLY KNOWN AS ISHIK UNIVERSITY)

Venue :

TISHK INTERNATIONAL
UNIVERSITY
Education Building
March, 07, 2019
Hall: 302

Abstract:

Downhole sensing technology today provide engineers continuous measurements for flow condition diagnosis. The measurements include temperature, pressure, acoustic, and strain, with distributed temperature sensors (DTS) and distributed acoustic sensors (DAS) being more commonly used compared with other measurements. Since the optical fiber technology introduced to the industry, it has advanced dramatically. Many field applications have been proven effective and beneficial. From downhole flow condition characterization, we can diagnose flow problems, monitor, control, and optimize producing and injecting well performance, monitor well stimulation, both matrix acidizing and hydraulic fracturing, and optimize treatment designs. There are rich field application examples to show the potential of the technology.

One of the keys of applying downhole sensing technology is to develop models and methodologies to interpret the sensor measurements. This is challenging, because from data collection and processing, to model development, to invert the measured parameters to flow profiles, it is extremely mathematical and computationally intensive. In this lecture, we will review current status of downhole sensing technology, explain the available models and approaches for interpretation, and present field application examples including production profiling, horizontal well flow control, matrix acidizing optimization and multi-stage hydraulic fracture diagnosis. The lecture is based on publications by the author and other SPE publications. The lecture illustrates the power of DTS as a tool for production problem diagnosis and well performance optimization.

DL Program Seminar Agenda

09:30 - 09:35 | Opening Ceremony
09:35 - 09:45 | Tishk International University Speech
09:45 - 09:50 | SPE Erbil Section speech
09:50 - 10:30 | First Session
10:30 - 10:50 | Coffee Break
10:50 - 11:20 | Second Session
11:20 - 12:00 | Open Discussion and Certificates Awarding
12:00 - 01:00 | Lunch Time



Dr. Ding Zhu Biography

Dr. Ding Zhu is a Professor at Petroleum Engineering Department at Texas A&M University. She Holds a BS degree in mechanical engineering from the University of Science and Technology, Beijing, China, a MS and PhD degree in Petroleum Engineering, both from the University of Texas at Austin. Her research areas are production engineering, well stimulation, intelligent well modeling and complex well-performance

optimization. Dr. Zhu is an author of more than 150 technical papers, a co-author of text book, Petroleum Production Systems (2nd edition), and a co-author of a SPE book, Multilateral Wells. She has been a committee member and chairperson for many conferences and events with Society of Petroleum Engineers, and is currently an associate editor for SPE Production and Operation Journal. She is a Distinguished Member of SPE..



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