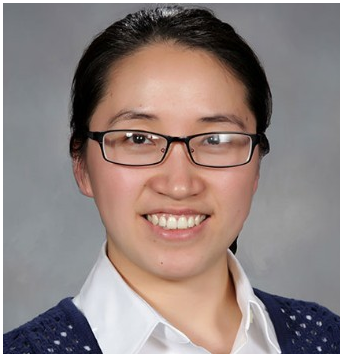


# Fracture Hits and Hydraulic Fracture Geometry Characterization based on Cross-well DAS Measurement

Kan Wu, Texas A&M University

Thursday March 25, 2021, 9 a.m. Central Time



Dr. Kan Wu, Assistant Professor and Chevron Corporation Faculty Fellow in the Harold Vance Department of Petroleum Engineering at Texas A&M University will speak on Thursday, March 25, 2021.

The topic is “Fracture Hits and Hydraulic Fracture Geometry Characterization based on Cross-well DAS Measurement.”

## Abstract

Hydraulic fracturing with the plug-and-perf completion technique in a horizontal wellbore enables the economic development of unconventional reservoirs. Despite their successful applications, accurate characterization of complex hydraulic fracture geometry created in unconventional reservoirs remains challenging due to the complexities of stress shadow effects and hydraulic fractures interacting with rock fabric as well as heterogeneities of rock properties and stress state. A better understanding of generated fracture geometry is of significant importance in unconventional reservoir development. The cross-well distributed acoustic sensing measurement is a promising tool that has been used in monitoring the well stimulation in unconventional reservoirs. Interpretation of the measurement is challenging due to the complex subsurface conditions as well as some unanticipated completion issues such as perforation failure, stage isolation failure, etc. Hence, the goal of our study is to understand and utilize the cross-well distributed acoustic sensing measurement for quantitative hydraulic fracture geometry characterization. The specific objectives including: (1) understand mechanisms of strain rate response during hydraulic fracturing treatments by developing a forward model to calculate displacement, strain, and strain rate; (2) propose guidelines for fracture hits and efficiently identify numbers, locations, and timings of fracture hits for multi-stage fracturing; (3) develop an inversion model to quantitatively calculate fracture width evolution at the monitoring well and predict fracture length and height.

## **Biography**

Dr. Kan Wu is an Assistant Professor and Chevron Corporation Faculty Fellow in the Harold Vance Department of Petroleum Engineering at Texas A&M University. Wu has authored or co-authored more than 90 technical papers. Her Ph.D. degree is in Petroleum Engineering, awarded by the University of Texas at Austin. She is an Associate Editor for the SPE Reservoir Evaluation & Engineering Journal and the Journal of Petroleum Science and Engineering. The research in her group includes: (1) hydraulic fracture modelling and optimization, (2) multi-scale and multi-physics modelling, and (3) data interpretation and geomechanics modelling of Distributed Acoustic Sensing (DAS). Her publications have been cited about 2722 times and more than 2590 times over the past five years (Source: Google Scholar).