



MEWBOURNE COLLEGE OF EARTH AND ENERGY
**MEWBOURNE SCHOOL OF PETROLEUM
AND GEOLOGICAL ENGINEERING**
The UNIVERSITY of OKLAHOMA

MPGE Technical Seminar

How Do the Petroleum Education and Industrial Experience Shape My Vision in Energy Transition?

Abstract: The field of Petroleum Engineering, an interdisciplinary domain, has granted me a profound opportunity to delve into a spectrum of subjects including physics, mathematics, chemistry, solid and fluid mechanics, electronics, materials science, thermodynamics, and programming, among others. Eight years of dedicated education in petroleum engineering, spanning from undergraduate to graduate levels, have ingrained within me a framework of critical engineering thinking. This prolonged academic journey has nurtured my capacity for autonomous thought, self-directed learning, effective problem-solving, collaborative teamwork, and adept leadership. Complementing my academic foundation, eight additional years of hands-on experience in the petroleum industry have furnished me with a distinct perspective. This real-world exposure has honed my ability to architect innovative and pragmatic solutions to address industrial challenges, explore and manage the uncertainties in the real world with the basic knowledge I learned from the school as a foundation, and guidance by the first principle of thinking.

I felt lucky that I, as a young professional of petroleum engineering, had witnessed the whole life cycle of unconventional shale gas and oil from 2005 to 2021, and the historical peak oil price in 2008 and valley price in 2020. Unfortunately, the birth and booming of unconventional oil and gas occurred when I was an undergraduate and graduate student. Therefore, limited contribution to the oil and gas independence of the US, and little chance to be a legend in the history of unconventional oil and gas.

The phenomenon of oil and gas prices being inverted with the clean energy prices in 2020, and the booming of Tesla triggered my critical thinking of the energy transition, my role in the next decades, and the opportunity to help the US to meet the goal of critical metals independence in the era of energy transition. Therefore, I decided to start a new chapter by learning new knowledge, and leveraging the petrochemical technologies to the metallurgy industry to address the challenges of extracting critical metals from spent lithium-ion batteries, petrochemical catalyst, ceramic glasses, oilfield produced water, etc.

Jacob Jin earned his B.S. and Ph.D. degrees in Petroleum Engineering from China University of Petroleum (East China), the University of Oklahoma in 2009 and 2014 (left school in 2013 due to job offer), respectively. He began his industry career working for Shell, Weatherford, and BP, before moving to the University of Utah as a Senior Research Scientist, with a focus on renewable energy. In 2017, he co-founded ULTRRecovery Corporation in Houston with venture capital support, with a mission to develop environmentally friendly processes for unconventional oil and gas recovery. After several successful field pilots, ULTRRecovery was acquired by a publicly listed company in 2021. In the Petroleum industry, Dr. Jin published 20+ peer reviewed and SPE conference papers, of which the fracability research was a breakthrough and has been impacting hydraulic fracturing industry.



Dr. Jacob Jin

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