Towards Cleaner Fossil Energy Utilization: 
The Option of Carbon Capture & Sequestration

Dr. Yongqi Lu, 
Research Chemical Engineer, 
Advanced Energy Technology Initiative, 
Illinois State Geological Survey, 
Prairie Research Institute, 
University of Illinois at Urbana-Champaign

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ABSTRACT:
Reducing carbon dioxide (CO₂) emissions is a major factor in mitigating climate change. At present, CO₂ emissions are largely generated from fossil fuel utilization, especially coal combustion. This pattern is expected to remain unchanged in the foreseeable future. Carbon capture and sequestration (CCS) is considered an important option for mitigating CO₂ emissions from fossil fuel utilization. Dr. Lu will begin the presentation by introducing the progress of CCS activities in the United States, including an ongoing demonstration project led by the University of Illinois to store one million tons of CO₂ in a geological formation. CO₂ capture is the most expensive step in the CCS process, and Dr. Lu will discuss the issues and challenges of state-of-the-art capture technologies. He will then introduce the related CO₂ capture R&D activities in his group and deliberate on the development of novel biocatalysts, solvents, adsorbents, and related systems for high-efficiency, low-cost CO₂ capture.

BIO:
Dr. Yongqi Lu joined the University of Illinois in 2002 and is presently a Research Chemical and Environmental Engineer at the university’s Advanced Energy Technology Initiative at the Prairie Research Institute. He earned his Ph.D. in Environmental Engineering from Tsinghua University, China, in 1997. Dr. Lu has more than 20 years of R&D experience in fossil energy and air pollution control. He has been the principal investigator on multiple projects funded by the U.S. Department of Energy (USDOE), the Electricity Power Research Institute (EPRI), and the Illinois Clean Coal Institute (ICCI) pertinent to CO₂, acid gas, and trace metal emissions control from fossil fuel combustion and gasification. He has published more than 40 peer-reviewed articles and has three U.S. patents on inventions in this area.