



Frontiers in Chemistry Lectureship Series



Professor Kevin Schug

“Monitoring Groundwater Quality and Assessing Water Recycling Technologies in the Unconventional Oil and Gas Space”

4:00 pm Monday, January 14th, 2019

WO 1205

Abstract:

Unconventional oil and gas (UOG) extraction technology, combined with the presence of fossil fuel resources across the country, has enabled the United States to become the leading petroleum producer in the world. However, environmental monitoring operations have not kept pace with the development of shale resources. The Collaborative Laboratories for Environmental Analysis and Remediation (CLEAR) has conducted the most comprehensive analyses of groundwater quality in proximity to oil and gas operations in Texas. Current monitoring efforts in south and west Texas are conducted with a variety of analytical methodologies developed through prior work in the Barnett Shale of north Texas. These include targeted and untargeted methodologies for monitoring myriad organic, inorganic, and biological constituents. Episodes of contamination are non-systematic, but they do occur.

UOG operations also consume a large amount of water and produce a large quantity of wastewater. In arid and semi-arid regions, reuse of treated wastewater has been increasing as new wastewater treatment technologies are developed. These technologies must meet performance and throughput demands while remaining economical, in order to be adopted. CLEAR has also developed and applied a wide variety of analytical methods for evaluating the performance of water treatment technologies. These have been applied to evaluate a variety of different technologies, some of which are highly viable for reducing the freshwater burden of UOG operations.

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Bio:

- Professor and the Shimadzu Distinguished Professor of Analytical Chemistry in the Department of Chemistry and Biochemistry at The University of Texas at Arlington (UTA)
- Co-founder and director of the Collaborative Laboratories for Environmental Analysis and Remediation (CLEAR) at UTA
- Post-doctoral research at the University of Vienna in Austria 2003-2005
- Ph.D. degree in Chemistry from Virginia Tech in 2002
- B.S. degree in Chemistry in 1998 from the College of William and Mary
- 2009 Emerging Leader Award in Chromatography by LCGC Magazine
- 2013 American Chemical Society Division of Analytical Chemistry Young Investigator in Separation Science Award
- 2017 J. Calvin Giddings Award for Excellence in Analytical Chemistry Education