

DEPARTMENT OF CHEMISTRY AND ENVIRONMENTAL SCIENCE
SEMINAR SERIES
SPRING 2023

WEDNESDAY, MARCH 29, 2023
TIERNAN HALL – LECT. HALL 2
1:00PM-2:20PM

GUEST SPEAKER

Dr. Aaron M. Jubb
U.S. Geological Survey
Reston, VA

TOPIC

Oil and gas-associated wastewaters: Fundamental aspects, measurement challenges, and opportunities for reuse and commodity extraction

ABSTRACT

Oil and gas-associated wastewaters (i.e., produced waters) represent the largest waste by volume generated during petroleum extraction with an estimated 3 trillion liters requiring disposal in the U.S. annually. These wastewaters encompass both flowback fluids (water mixtures returned to the Earth's surface following injection) and in situ brines from the targeted petroleum-bearing formation. Produced waters can have salinities 10× higher than seawater (up to 400,000 mg/L) and contain a complex ensemble of dissolved organic species due to their association with petroleum and organic-rich source rocks. This combination of large fluid volumes with complex compositions have made oil and gas-associated wastewaters the focus of much attention, primarily with regards to understanding the geologic origin of subsurface brines, environmental and human health considerations, and opportunities for reuse and commodity extraction.

In this talk I will briefly highlight several on-going U.S. Geological Survey research efforts focused on produced waters. Topics will include:

- Understanding hydrogen-bonding in high salinity produced waters from shale reservoirs,
- Method development efforts for inorganic and organic constituent analysis, and
- Evaluation of resources (e.g., Li) contained within these wastewaters.

BIO



Dr. Aaron M. Jubb is a Research Chemist at the U.S. Geological Survey (USGS) in Reston, Virginia in the Geology, Energy & Minerals Science Center. He received his

B.A. in chemistry from Lawrence University in 2006 and a Ph.D. in chemistry from The Ohio State University in 2012. Following his graduate studies, Aaron was a post-doctoral fellow at the National Oceanic and Atmospheric Administration in Boulder, Colorado and then at Oak Ridge National Laboratory in Oak Ridge, Tennessee. Aaron joined the USGS in 2017 where his main areas of study involve (i) sedimentary organic matter structure-reactivity relationships at sub-micron scales, (ii) porosity and fluid behavior in low permeability geologic matrices and (iii) oil and gas-associated wastewaters.

Seminar Coordinator:

Dr. Genoa Warner – grw4@njit.edu
Dr. Lijie Zhang - lijie.zhang@njit.edu