

## Education

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**B.S. Computer Engineering, University of Oklahoma**

**May 2026 (Expected)**

- Major GPA 4.00 / 4.00

**M.S. Geology, University of Wyoming**

**May 2017**

- Focus: Geochemistry (GPA 3.95 / 4.00)

**B.A. Earth and Environmental Science, University of Kentucky**

**May 2014**

- Major: Geological Sciences, Minor: Chemistry (GPA 3.25 / 4.00)

## Graduate Research

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**M.S. Research, University of Wyoming, Advisor: Dr. John Kaszuba**

**June 2014 - May 2017**

- Investigated water-rock interactions between synthetic hydraulic fracturing fluids and the Frontier Fm. of the Powder River Basin, Wyoming.
- Experiments addressed the effect of ionic strength (salinity) and pH (acidity) on geochemical responses related to the reuse of wastewaters generated during hydraulic fracturing.
- Results show that subtle changes in solution salinity or acidity have significant impacts on the carbonate matrix and feldspar minerals of the Frontier Fm. reservoir.

## Professional Experience

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**Staff Scientist, Expand/Chesapeake Energy, Special Core Analysis**

**September 2017 - Present**

- Incorporated LabVIEW and Python programming, electronics, and manufacturing experience (including 3D printing/laser cutting) to build versatile data acquisition systems and laboratory software for regular use in the SCAL laboratory.
- Individual responsibilities included designing and operating high pressure laboratory experiments such as: mercury injection capillary pressure, relative permeability, fluid sensitivity, electrical properties, low pressure gas adsorption, total gas content, and fracture conductivity.
- Completed LabVIEW programs included software for CO<sub>2</sub>-Toluene Cleaner, SCAL Systems, Stress Dependent Acoustics, and Biot's Measurements.
- Significant research contributions included developing a reliable method of determining porosity using cuttings.

**Electronic Artist (Instagram: @the.rad.scientist)**

**January 2019 - Present**

- Utilized programming, 3D design, additive manufacturing, and electronics experience to create science fiction themed escape room puzzles for regular use at Clue Quest of Edmond, OK.
- Collaborated with Factory Obscura artists (Oklahoma City, OK) to design and install robust lighting projects, interactive art pieces, and a variety of puzzles that create the immersive art experience known as Mix-Tape.

**Trivia Host, Challenge Entertainment**

**April 2017 - December 2017**

- Completed over 150 hours of public speaking while organizing and hosting trivia nights at various bars/restaurants.
- Responsibilities included setting up equipment, handling money, addressing customer's requests, and maintaining a fun, hospitable environment.

**Lab Technician II, Chesapeake Energy, Rock Mechanics**

**November 2016 - September 2017**

- Coordinated with geologists and engineers to provide mechanical rock properties to Chesapeake Energy using a variety of testing methods.
- Responsibilities included collecting and preparing core samples for ultrasonic and rebound hardness analyses.
- Other significant contributions included assisting coworkers with unconfined compressive strength testing, confined triaxial strength testing, and data processing.

**Research Assistant, University of Wyoming****August 2015 - November 2016**

- Organized lab materials, improved and repaired lab equipment, and ensured smooth operations within the Hydrothermal laboratory.
- Developed a standard operating procedure for experimental design, setup, operation, and fluid sample analysis.
- Assisted undergraduate and graduate students with laboratory equipment operation and data analysis.

**AAPG Imperial Barrel Award, University of Wyoming****January 2015 - March 2015**

- Collaborated with fellow graduate students to present geologic interpretations about hydrocarbon generation, migration, accumulation, and production to a panel of experienced exploration geologists.
- Individual contributions included source rock evaluation, regional paleogeography, and petrophysical log interpretation/correlation in the Taranaki Basin, New Zealand.

**Lab Technician, SGS Minerals****June 2010 - December 2014**

- Provided daily coal quality reports to mine foremen and laboratory supervisors. Received Experienced Surficial Miner's License and hazard training.
- Responsibilities included collecting and preparing samples for analysis, compiling and distributing chemical reports, and operating/servicing laboratory equipment such as calorimeters, sulfur analyzers, and ash/moisture ovens.

**Research Assistant, Kentucky Geologic Survey****February 2013 - December 2013**

- Utilized Microsoft Access to manage coal quality data for the entire state of Kentucky with the goal of making a complete mining record and coal quality database for public use.
- Used gamma ray and resistivity logs from various statewide sources to identify stratigraphic correlations and improve the geologic understanding of coal beds in Kentucky.

**Laboratory Equipment and Software Experience**

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**Operational proficiency with:**

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| • Equotip 3 Hardness Tester             | • Dionex ICS-5000 Ion Chromatograph           |
| • Leco SC-144DR Sulphur/Carbon analyzer | • UIC CM5015 Coulometer                       |
| • Parr 6100 Calorimeter                 | • Steady-State Permeameter                    |
| • Katanax K1 Prime Electric Fluxer      | • Quanta FEG 450 Scanning Electron Microscope |
| • Optima 8300 ICP-OES Spectrometer      | • Microelectronics (Arduino, RaspberryPi)     |
| • QIDI Tech 3D Printer                  | • Micromeritics TriStar II Plus               |
| • NextEngine 3D Scanner                 | • AutoLab 1500 Triaxial System                |
| • Micromeritics Autopore IV             | • InfiniiVision 4000x Oscilloscope            |
| • Helium Pycnometer                     | • Glowforge Laser Cutter                      |
| • Ultrasonic Wave Velocity Analyzer     |   |

**Operational experience with:**

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| • SCINTAG XDS 2000 XRD (copper tube)             | • HP 8452A Diode Array Spectrophotometer       |
| • Gemini 2375 Surface Area Analyzer              | • ECS 4010 Elemental Analyzer                  |
| • Quikchem 8500 Series 2 Flow Injection Analyzer | • PinAAcle 900F Atomic Absorption Spectrometer |

**Software/Programming Languages:** AutoCAD, Geochemist's Workbench, Simplify 3D, TinkerCAD, Inkscape, LabVIEW, MATLAB, Python, C/C++

**Publications**

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- Author: "Ionic Strength and pH Effects on Water-Rock Interactions in an Unconventional Reservoir: On the Use of Formation Water in Hydraulic Fracturing", *Energy & Fuels*. 2021; 35: 18414–18429.