

# RICHARD MESSERLY

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## EDUCATION

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- Ph.D. Chemical Engineering**, Brigham Young University, Provo, UT 2017
- Dissertation: How a Systematic Approach to Uncertainty Quantification Renders Molecular Simulation a Quantitative Tool in Predicting the Critical Constants for Large  $n$ -Alkanes
  - Expertise: Force Field Development, Computational Chemistry, Configuration Reweighting, Uncertainties in Molecular Simulation, Thermodynamic Data Analysis
  - Elective Courses: Quantum Chemistry, Statistical Mechanics, Nonlinear Statistical Analysis, Polymer Science and Engineering, Advanced Organic Chemistry, Classical Mechanics, Instrumental Analysis Lecture/Lab GPA: 4.0
- B.S. Chemical Engineering**, Brigham Young University, Provo, UT 2012
- Elective Courses: Molecular Modeling, Introduction to Partial Differential Equations
  - Excelled in: Thermodynamics, Physical Chemistry, Reaction Engineering, Separations, Process Control, Statistics
  - Minors: Spanish, French Overall GPA: 3.78

## WORK EXPERIENCE

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- Postdoc Associate**, National Institute of Standards and Technology, Boulder, CO Feb. 2017- 2019
- Received 91/100 scoring from National Research Council selection committee
  - Implemented alchemical free energy methods to accelerate Bayesian inference of force field parameters
  - Presented research updates for thirty minutes at annual meetings with consortium members
  - Collaborated with researchers at the National Institute of Standards and Technology, University of Colorado, University of Akron, Wayne State University, and the Open Force Field Initiative
  - Mentored undergraduate student during three-month project for the 10<sup>th</sup> Industrial Fluid Properties Simulation Challenge
- Research Assistant**, Design Institute for Physical Properties, Provo, UT Jan. 2012-Feb. 2014
- Performed experimental work that involved: preparation, execution, cleaning, and processing data
  - Evaluated literature experimental data and property prediction models for two biofuels
  - Presented research updates for thirty minutes at biannual meetings with sponsors
  - Mentored two undergraduate students performing experimental work and data analysis
- Teaching Assistant**, BYU Chemical Engineering, Provo, UT
- Courses: Chemical Process Principles, Dr. Thomas H. Fletcher Jan.-Apr. 2012  
Plant Design & Synthesis, Dr. W. Vincent Wilding Jan.-Apr. 2013/2014  
Molecular Modeling, Dr. Thomas A. Knotts IV Jan.-Apr. 2015
  - Conducted exam reviews, held office hours, and graded homework assignments

## VOLUNTEER WORK

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- Church Representative**, The Church of Jesus Christ of Latter-day Saint, Guatemala Nov. 2006-2008
- Led a regional group of 12 representatives
- Boy Scout Leader**, Boy Scouts of America 1999-2006
- Inspired younger scouts to achieve their Eagle while organizing campouts and teaching activities

## SKILLS/AWARDS

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- **Programming languages:**
    - Python – advanced
    - MATLAB – advanced
    - Bash/Shell – intermediate
    - C++ – basic
    - Visual Basic for Applications (VBA) – basic
    - R Project for Statistical Computing – basic
    - Structured Query Language (SQL) – basic
  - **Molecular simulation packages:**
    - Gromacs – advanced
    - Monte Carlo for Complex Chemical Systems (MCCCS) Towhee – advanced
    - Cassandra – intermediate
    - Gaussian – intermediate
    - GPU Optimized Monte Carlo (GOMC) – intermediate
    - Large-scale Atomic/Molecular Massively Parallel Simulator (LAMMPS) – basic
  - **Additional software:**
    - LaTeX – advanced
    - Microsoft Office – advanced
    - Mathcad – advanced
    - Git – intermediate
  - **Spoken languages:**
    - **Spanish** – advanced reading, writing, and speaking
    - **French** – intermediate reading, writing, and speaking
    - **Portuguese** – basic reading, writing, and speaking
  - **Dean's List Student** – achieved a 4.0 semester GPA as undergraduate
  - **Eagle Scout Award** – erected a flag pole in front of a religious center
- Apr. 2009 & Jun. 2010  
Sept. 11<sup>th</sup>, 2002