1995 E Coalton rd 89-102, Boulder, CO 80027

801-358-1741 • richard.messerly@nist.gov

education

**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

**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 10th 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

**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

* **Programming languages:** 
  + Python – advanced
  + MATLAB – advanced
  + Git – intermediate
  + C++ – basic principles
  + Visual Basic for Applications (VBA) – basic principles
  + R Project for Statistical Computing – basic principles
* **Molecular simulation packages:**
  + Gromacs – advanced
  + Monte Carlo for Complex Chemical Systems (MCCCS) Towhee – advanced
  + Cassandra – intermediate
  + GPU Optimized Monte Carlo (GOMC) – basic principles
* **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 Apr. 2009 & Jun. 2010
* **Eagle Scout Award -** erected a flag pole in front of a religious center Sept. 11th, 2002