Mark Edward Redd

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Publications

- Joseph C. Bloxham, Mark E. Redd, Neil F. Giles, Thomas A. Knotts, and W. Vincent Wilding, *Proper Use of the DIPPR 801 Database for Creation of Models, Methods, and Processes*, Journal of Chemical & Engineering Data **2021** *66* (1), 3-10. DOI: 10.1021/acs.jced.0c00641

Experience

PhD Researcher

Brigham Young University, Provo, UT, USA | Jul 2016 – Present

- Research focus in autoignition temperatures (AIT) of pure compounds focusing on chemical family trends
- Mentored 20+ undergraduates focusing on safety and relevant laboratory skills
- Designed and constructed experimental apparatus and data acquisition hardware and software
- Worked as a teaching assistant for undergraduate courses on "Chemical Plant Design" and "Numerical Methods"
- Automated data acquisition and analysis by writing custom software using Python, C/C++, and Arduino

Engineering Intern

Sustainable Energy Solutions LLC, Orem, UT, USA | May 2014 – Aug 2015

- Worked with a team of engineers to build an experimental reactor
- Personally designed and fabricated multiple components of reactor through various welding and machining processes
- Assembled and wired multiple components on coal fire reactor
- Designed and began fabrication of a specialized CO_2 separation process
- Designed parts and assemblies with Autodesk Inventor CAD software

Chemical Engineering Laboratory Assistant

Brigham Young University, Provo, UT, USA | Jun 2012 – May 2014

- Managed and carried out all aspects of laboratory work in an independent and unsupervised setting
- Installed, repaired and maintained ceramic gasification reactor and components
- Collected data on more than 70 reactions to develop accurate kinetic models

- Improved efficiency of data collection by automating data analysis and graphic generation with Microsoft VBA
- Built, repaired and maintained various components of experimental reactor apparatus
- Trained 2 new employees in safety regulations and standard operating procedures

Full-Time Volunteer Missionary

The Church of Jesus Christ of Latter-day Saints, Salta, Argentina | Sep 2009 – Sep 2011

- Trained and mentored 2 new missionaries
- Conversed with 100+ people on the street and in homes explaining concepts in Spanish
- Participated in regular community service in 5 cities. Projects included cleaning a community park, street waste disposal and hospital visits

Biology Laboratory Assistant

Utah State University, Logan, UT, USA | Apr 2009 – Aug 2009

- Assisted a PhD candidate with experiments on Arabidopsis thaliana to find patterns in gene expression from the removal of Saccharide-9 from the plant genome
- Collected data from over 100 specimens by making synthetic growth media, planting and observing growth patterns

Education

Brigham Young University

Doctor of Philosophy, Chemical Engineering | Jul 2016 – 2021

Brigham Young University

Bachelor of Science, Chemical Engineering | Sep 2008 – Apr 2016

Skills & Accomplishments

Programming

- Experience with C / C++, C#, FORTRAN, Java, JavaScript / HTML / CSS, MATLAB, Python, Microsoft VBA
- Implemented and published the open-source Algorithm with library wrappers for C, C++ and Python
- Wrote an open-source introductory on Python and computer science

Software / Platforms

- Experience with Arduino, Autodesk Inventor, GCC and GNU Build Tools, Git, Linux, MathCAD, MATLAB / Simulink, Microsoft Office
- Built custom data acquisition and analysis hardware and corresponding software using Arduino and other open-source platforms

Industrial

- Automotive repair and maintenance
- Electronics soldering and wiring
- Machining processes (i.e. end milling, turning etc.)
- Welding (SMAW, GMAW, Oxy-acetylene welding and brazing, GTAW)