Jerry Crum

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Education

Ph.D. in Chemical Engineering, University of Notre Dame, Indiana
In progress, expected spring 2022

B.S.E. in Chemical Engineering, Arizona State University, Arizona
Graduated summa cum laude, 2017

A.A. in General Studies, Maricopa System of Community Colleges, Arizona
Graduated, 2012

Awards, Grants, and Fellowships

Best Poster Award
CISTAR Biannual Meeting
2020

Arthur J Schmitt Leadership Fellowship
University of Notre Dame
2017

Dean's Distinguished Graduate Fellowship (awarded but declined)
UC Davis
2017

Most Outstanding Design Award
Arizona State University
2017

Fulton Undergraduate Research Initiative Grant
Arizona State University
2016

Dean's List
Arizona State University
Every semester: Fall 2014 - Fall 2016

President's List
Chandler-Gilbert Community College
2014

Academic Excellence in Organic Chemistry
Chandler Gilbert Community College
2014

Developed Software

Zeolite Simulation Environment (Python)
Automate the generation and characterization of zeolite structures
github.com/jtcrum/zse

NewPy (Python)
Package to generate beautiful Newman projections in Python
github.com/jtcrum/newpy

KCROOZ (Respitory)
Library of zeolite structures with optimized lattice constants
github.com/jtcrum/kcrooz

vasp (Python)
Python 3 interface for the VASP DFT Software
github.com/jtcrum/vasp - Contributor

Service

Professional Development Chair, Chemical and Biomolecular Engineering Graduate Student Organization
2020-2021

Chair, CISTAR Student Leadership Council
2020

President, Chemical and Biomolecular Engineering Graduate Student Organization
2019-2020

Treasurer, Chemical and Biomolecular Engineering Graduate Student Organization
2018-2019

Vice President, Engineers Without Borders
2016-2017

Project Lead, Engineers Without Borders
2015-2016

Publications

- P. M. Kester, J. T. Crum, S. Li, W. F. Schneider, R. Gounder, "Effects of Brønsted Acid Site Proximity in Chabazite Zeolites on OH Infrared Spectra and Protolytic Propane Cracking Kinetics," J. Catal. 2021, 395, 210-226. doi:10.1016/j.jcat.2020.12.038

Patents

Tissue Integrating Materials for Wound Repair
US20170232157A1 - Pending

Presentations

"CISTAR - Responsibly Realizing the Potential of Shale Gas Resources"
ND Energy Luncheon
February, 2020

"CISTAR @ Home: Keep STEM Exciting Virtually"
Engineering Research Center Education Workforce Development Workshop
November, 2020

Posters

"Interrogation and Catalytic Consequence of Al Proximity in Zeolites" 2020 CISTAR Biannual Meeting

"Interrogation and Catalytic Consequence of Al Proximity in Zeolites" 2020 CISTAR Annual Meeting

"DFT Simulated IR Spectra of Brønsted Acidic Zeolites for Characterization of Al Proximity" 2019 CISTAR Biannual Meeting

"DFT Simulated IR Spectra of Brønsted Acidic Zeolites for Characterization of Al Proximity" 2019 CISTAR Annual Meeting

"Synthesis of Zeolites Substituted with Boron and Aluminum Heteroatoms for Light Hydrocarbon Upgrading Catalysis" 2018 CISTAR Biannual Meeting

"Spectroscopic and Kinetic Assessment of the Proximity of Brønsted Acid Sites in Chabazite Zeolites" 2018 Chicago Catalysis Club Symposium

"Synthesis of Zeolites Substituted with Boron and Aluminum Heteroatoms for Light Hydrocarbon Upgrading Catalysis" 2018 CISTAR Annual Meeting

Workshops Taught

"Python Plotting and Curve Fitting for Experimentalists"
Audience: Notre Dame Graduate Students
February 2021

"Python Tutorial"
Audience: Notre Dame Physical Chemistry Course
August 2019 & 2020

"DFT for Zeolites"
Audience: Notre Dame / Northwestern Graduate Students
November 2019

Technical Skills

Languages: Python, Lisp (Emacs), Unix, C++
Python Libraries: Atomic Simulation Environment, NetworkX
Technical Software: VASP, Aspen, MATLAB, Mathematica, ChemCAD, Vesta

Professional Experience

RAPID Intern: May 2020 - August 2020
Rapid Advancement in Process Intensification Deployment, South Bend, IN

Global Procurement Intern: June 2017 - August 2017
PepsiCo / Frito-Lay, Plano, TX

Internal Technical Support: November 2011 - July 2017
Bank of America, Phoenix, AZ

Undergraduate Researcher - Laser Tissue Welding: January 2015 - May 2017
Arizona State University, Tempe, AZ

Engineering Intern: May 2016 - August 2016
Archer Western Contractors, Naples, FL

Certified Tutor: January 2013 - December 2013
Estrella Mountain Community College, Avondale, AZ

Chemistry Lab Technician: January 2013 - December 2013
Estrella Mountain Community College, Avondale, AZ

Private Banker: June 2009 - October 2011
OneWest Bank, Laguna Woods, CA

Personal Banker: August 2007 - December 2008
Washington Mutual, Avondale, AZ

Teller: June 2005 - August 2007
Washington Mutual , Avondale, AZ