Jeffrey A. Whitridge

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Experience

Volunteer Research Assistant – Dr. Fenning Research Group, U.C. San Diego, 2016

- Assisted postdoctoral researcher investigating the electrochemical reduction of carbon dioxide to hydrocarbons such as methane. The hydrocarbons were measured using gas chromatography and formed at low overpotentials via nanoscale morphological modification of the cathode surface.
- Prepared electrolytic solutions and formed structures of Cu, and Cu-Sn-Zn alloys for use as cathode samples.
- Used SEM, optical microscopy, and EDX spectroscopy to examine samples.
- Proposed, via sketches and computer renderings, a new design for the electrochemical cell which would allow for easier loading of samples and a consistent area of sample exposure, which led to the fabrication of a new setup.
- Modified Matlab files to automatically import integration parameters for various chemicals from a series of ASCII chromatograph output files, and to plot the results for each chemical.
- Trained other research assistants.

Volunteer Research Assistant – Materials Research Center, U.C. San Diego, 2015

- Assisted in assembling and ordering components for a high-temperature analysis Hopkinson Bar.
- Assisted graduate student's research in spark-erosion steel nanoparticle synthesis.
- Performed miscellaneous repairs and maintenance around the laboratory.

Tutor – Learning Assistance Program, Saddleback Community College, 2011

- Tutored students in mathematics, chemistry, and physics, and acted as a mentor toward other students.

Draftsman – Azizi Architects, Inc., 2009

- Arranged drawings and corrected graphical and typographical errors on construction document sheets in AutoCAD.

CAD Software

- SolidWorks
- AutoCAD
- Blender

Programing Languages

- Python
- Matlab

Some familiarity with: •C •C++ •G-Code

Education

B.S., Nano Engineering with a focus in Materials Science, 2016
University of California, San Diego – Jacobs School of Engineering

A.S., Architectural Drafting, 2010
Saddleback Community College

Sample of Studied Topics

•AFM •DLS •EDX •EELS •FIB •FTIR •SEM •STM •TEM •UV-VIS •XPS •XRD
•FDTD Method •Fermi energy •Density of states •Plasmonics •Semiconductors •PN-junctions •MOSFETs
•PVD •CVD •NIL •Lithography •Diffusion •Intra/Intermolecular forces •Seebeck and Peltier effects

Related Coursework

Nano Engineering
- Nano Eng. Physical Principles
- Nano Eng. Chemical Principles
- Nano Eng. Biochem. Principles
- Modeling Nanoscale Systems
- Characterization of Nano Sys.
- Synthesis & Fab. of Nano Sys.

Materials Science
- Mats. Science & Eng.
- Physical Props. of Mats.
- Thermodynamics of Mats.
- Phase Transform. & Kinetics
- Elec., Dielec., & Magnetic Props. of Mats.

Mechanics
- Mech. Behavior of Materials
- Mechanics of Nanomaterials
- Fluid Mechanics

Electrical Eng.
- Analog Circuits
- Digital Circuits
- Components & Circuits

Misc.
- Quantum Physics
- Organic Chem. I. & II.