

SILAS WOLFF-GOODRICH

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EDUCATION

Master of Science, Materials Science and Engineering

August 2014–May 2015

Bachelor of Science, Materials Science and Engineering

August 2010–May 2014

The University of California, Berkeley

GPA: 3.9 (Master's) — 3.5 (Bachelor's)

- Awards: QUEST Research Scholar, Summer 2013; College of Engineering Dean's Honors, Fall 2013
- Research: <http://dx.doi.org/10.1039/C5CP03228H> ; <http://dx.doi.org/10.1088/0965-0393/23/5/055001>
- Relevant Coursework: Engineering design and analysis; thermodynamics; bonding, crystallography, and crystal defects; experimental materials science design; materials characterization; mathematical tools for the physical sciences; mechanical behavior of engineering materials; corrosion (chemical properties); deformation and fracture of materials; solid mechanics; modeling and simulation of advanced manufacturing processes; metals processing; polymeric materials

JOB EXPERIENCE

Doctoral Researcher

November 2017–Present

Max-Planck-Institut für Eisenforschung

Düsseldorf, Germany

- Will submit EngD thesis for defense at the Ruhr University Bochum in early 2021.
- Conducting Research as part of the Deutsche Forschungsgemeinschaft (DFG) special priority programme (SPP) 2006: "Compositionally Complex Alloys – High Entropy Alloys (CCA-HEA)" <http://doi.org/10.1016/j.jallcom.2020.156111>
- Extensive literature review of current and state-of-the-art high temperature structural materials.
- Screening of large portion of five-element composition space by both bulk alloy casting and high throughput thin film synthesis. Involved characterizing microstructures using SEM and TEM; DSC thermal analysis; hardness testing.
- Selection of compositions for in-depth study using SEM+EDS+EBS, aberration corrected TEM, ambient and high temperature tensile testing, creep testing.
- Development of python codes for visualizing and quantifying datasets.

Materials Consultant

March 2016–June 2017

Simpson Gumpertz & Heger

Boston, Massachusetts

- Failure analysis of industrial components. Conducted metallography, fractography, SEM and EDS, composition analysis, stress and fatigue calculation and simulation, mechanical testing, material specification review.
- Litigation support for failure of fire protection systems. Involved chemical analysis (FTIR, EDS), cataloguing and organizing large sample sets, inspection of failures, reporting.
- Weld failure analysis and inspection. Conducted welding code review, process review, composition analysis, verification of electrode and base metal compatibility, field inspection of welds.
- Selection of best candidate materials for structural applications. Designed and conducted standardized mechanical property tests to rank candidate materials involving direct communication with machine shops, operation of universal testing machines, post-test material characterization.

Research and Development Intern

June 2015–September 2015

Imerys Performance and Filtration Minerals

San Jose, California

- Awarded scholarship for 2014/2015 academic year and reported directly to principle materials scientist, Dr. Bo Wang.
- Produced advanced diatomaceous earth filter-aids using large-capacity ribbon blender and high-temperature furnaces.
- Benchmarked filter-aid performance during real-time plant trials by determining densities and permeabilities of products and by using both constant flow rate and constant pressure fit-for-use filtration tests.
- Characterized products using XRD, XRF, and particle size distribution (PSD) analyses.
- Developed procedure and apparatus for testing lube-oil filtration using heated pressure vessel.
- Began developing feeder system for miniature rotary kiln for lab-scale reproduction of plant-scale calcination processes.

MISCELLANEOUS SKILLS

Sample Prep: Grinding, mechanical polishing and electropolishing, FIB

Characterization: SEM, EDS, EBSD, (S)TEM, XAS, FTIR, XRD, DSC, Photography, Mechanical testing

Programs: Matlab, Python, Linux OS, Adobe product suite (Photoshop, Illustrator), AutoDesk Inventor

Metal Working: Stick and MIG welding, grinding and cutting, sheet metal forming, vertical mill, lathe, band saw, drill press

Wood Working: Sanding and finishing, various saws, planer, joiner, drill press, lathe, chisels

REFERENCES

Professor Gerhard Dehm

Department Head and Institute Co-Director

Structure and Nano-/Micromechanics Department, Max-Planck-Institut für Eisenforschung

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Professor Mark Asta

Professor

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Dr. Christian Liebscher

Advanced Transmission Electron Microscopy Group Leader

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