**Dissertations resulting from research done at GSECARS**

**2024**
Jianshu Duan, “Abiotic Transformation of Terrestrial Natural Organic Matter Probed by Multimodal Spectroscopy”, Ph.D., Princeton University, 2024

**2023**


Yize Pan, “Thermo-Mechanics of Sands”, Ph.D., Northwestern University, 2023

Xinyi Liu, “Insight into the Nanostructure of “Water-In-Salt” Solutions: A SAXS/WAXS Study on IMIDE-Based Lithium Salts Aqueous Solutions”, Ph.D., Northern Illinois University, 2023.

Jianbo Jin, “Study of Halide Perovskites at the Level of Ionic Octahedron”, University of California, Ph.D., Berkeley, 2023

Joshua F Martin, “High-Precision Equations of State and Their Application to Terrestrial Planets”, Ph.D., Ohio State University, 2023


2022

Wenyi Zhou, “Single-crystal elasticity of Earth’s mantle transition zone minerals and High pressure-temperature phase equilibrium experiments on Martian basalts”, The University of New Mexico, Ph.D., 2022.


Yanyao Zhang, “Elasticity Across the Post-Stichovite Transition in Subducted Basalt”, University of Texas Austin, Ph.D., 2022.


Martin Ottesen, “High-pressure structural investigation of exotic perovskites”, Aarhus University, Ph.D., 2022.

Dawa Seo, “Multi-Scale Assessment of the Role of the Particle Shape on the Crushability of Sand”, Northwestern University, Ph.D., 2022.

Ashwin Ambi, “Understanding the Role of Copper in Alzheimer’s Disease and Cerebral Angiopathy”, State University of New York at Stony Brook, Ph.D., 2022.


Alwin James, “Discovery of novel metal oxynitride photocatalysts using combinations of in-situ X-ray diffraction and crystal structure prediction”, Ph.D., Stony Brook University, 2022.


2021

Inva Braha, “Sorption of Metals at the Barite (001)-Water Interface”, M.S., Queen’s College, City University of New York, 2021.


Sharon Ellman, "EVALUATING CONTACT ANGLE HYSTERESIS IN POROUS ROCKS BASED ON MICRO-CT IMAGING DATA A STUDY ON PORE-SCALE FLUID DISPLACEMENTS DURING IMBIBITION IN POROUS MEDIA," M.S., Ghent University, 2021.

Jessica Lessing, "Untersuchung der Wechselwirkungen von dreiwertigen Actiniden (Am, Cm) und ihrer Seltenerdhomologe (Eu, Y) mit synthetischem Ca-Feldspat," M.S., Technische Universität Dresden, 2021.


Zachary R. Osborne, "INVESTIGATIONS OF TRACE ELEMENT TITANIUM IN SILICA MINERALS," Ph.D., Syracuse University, 2021.


Claire Zurkowski, "Crystallography and phase relations of iron sulfides at Earth and planetary core conditions," Ph.D., University of Chicago, 2021.

2020


Egor Koemets, "The crystal chemistry of iron oxides and oxyhydroxides at extreme conditions: implications for the deep Earth’s oxygen cycle," Ph.D., University of Bayreuth, 2020.


2019


Stella Chariton, "The elastic properties and the crystal chemistry of carbonates in the deep Earth," Ph.D., University of Bayreuth, 2019.


Christopher M. Hoff, "DEFECT THERMOMETRY USING RUTILE AND FELDSPAR," Ph.D., Rensselaer Polytechnic Institute, 2019.

Yi Hu, "Metastable Pyroxenes and Their Role in the Subduction Process," Ph.D., University of Hawai‘i at Manoa, 2019.

Larissa Q. Huston, "The high pressure phase transformations of silicon and germanium at the nanoscale," Ph.D., Australian National University, 2019.


Xiaojing Lai, "Carbon in deep earth from high-pressure and high-temperature studies of the Fe-C system," Ph.D., University of Hawai‘i at Manoa, 2019.


Jing Liu, "Interactive Effects of Copper Oxide Nanoparticles and Arsenic on Rice (O.sativa japonica ‘Koshihikari’) Plant Growth and Development," Ph.D., Baylor University, 2019.


Pia Plese, "Interactions Between Gas Bubbles and Crystals in Silicate Melts," Ph.D., Université du Québec à Chicoutimi, 2019.


Michelle Yvonne Quigley, "CONTRIBUTION OF SOIL PORES TO THE PROCESSING AND PROTECTION OF SOIL CARBON AT MICRO-SCALE," Ph.D., Michigan State University, 2019.

Christopher Edward Schuh, "GEOCHEMICAL AND MINERALOGICAL CHARACTERIZATION OF ARSENIC IN LAKE SEDIMENTS IMPACTED BY LEGACY GOLD MINING IN THE YELLOWKNIFE REGION," Ph.D., Queen’s University, 2019.


Yuwei Wang, "Mercury transformation by anaerobic microorganisms," Ph.D., Rutgers University, 2019.


2018


Samantha M. Clarke, "Discovery of Novel High-Pressure Binary Bismuth Intermetallic Compounds," Ph.D., Northwestern University, 2018.


Changbum Sohn, "Multiscale Assessment of the Role of Particle-Scale Attributes on the Crushability of Granular Soils," Ph.D., Northwestern University, 2018.


2017

Alexandra Susann Bailey, "Characterization of arsenic-hosting solid phases in giant mine tailings and tailings dust," Masters, Queen's University, 2017.

A.S. Bailey, "CHARACTERIZATION OF ARSENIC-HOSTING SOLID PHASES IN GIANT MINE TAILINGS AND TAILINGS DUST," Masters, Queen’s University, 2017.


Ting Chen, "Elasticity of coesite and stishovite: implications for the Earth's mantle," Ph.D., Stony Brook University, 2017.


2016


Justin Robert Buis, "Copper isotope fractionation and the evolution of sulfide alteration in a Sudbury tailings impoundment," M.S., University of Waterloo, 2016.


E.S. Devers, "An examination of the reactivity of CO2 with Mg-silicates at pressures and temperatures of the earth's mantle and implications for deep carbon storage," Masters, Northern Illinois University, 2016.


L. Manoukian, "Geochemical Characterization of Coexisting Precipitates and Waters from High-Sulfidation Epithermal Gold Deposits," M.S., Queen’s University, 2016.

J.A. Nesbitt, "Geochemical investigation of fluid petroleum coke deposits at an oil sands mine in northern Alberta, Canada," M.S., University of Saskatchewan, 2016.

Morten Bormann Nielsen, "High pressure – A different approach to materials science," Ph.D., Aarhus University, 2016.

K.A. O'Neil, "An Investigation of the Adsorption Behavior Between Silver Nanoparticles (AgNPs) and Corundum (alpha-Al2O3) at Environmental pH Values using Inductively-Coupled Plasma Optical Emission Spectroscopy (ICP-OES) and Raman Spectroscopy," M.S., Wright State University, 2016.


Sally June Tracy, "Polaron hopping in olivine phosphates studied by nuclear resonant scattering," Ph.D., California Institute of Technology, 2016.


2015


E. Greenberg, "Pressure-induced electronic and related structural phase transitions in iron-bearing oxides," Ph.D., Tel-Aviv University, 2015.


Sascha Hofmann, "Der Einfluss endlagerrelevanter Elektrolyte auf die Wechselwirkung dreiwertiger Lanthanide und Actinide mit Calcit," Ph.D., Karlsruhe Institute of Technology, 2015.

Patricia Kalita, "High Pressure Behavior of Mullite-Type Oxides: Phase Transitions, Amorphization, Negative Linear Compressibility and Other Microstructural Implications," Ph.D., University of Nevada, Las Vegas, 2015.


C.J. Lubanowski, "Fe, Cu and Zn concentration in a MVP as a function of sulfur in magmatic-hydrothermal systems comparable to the porphyry-style environment," M.S., Northern Illinois University, 2015.


Peter K. Peterson, "Examining the role of sea ice and meteorology in Arctic boundary layer halogen chemistry," Ph.D., University of Alaska Fairbanks, 2015.

C. Qiu, "Structural study of Pb(II) and Sb(V) adsorption on the hydroxylated hematite(1102) surface," Ph.D., University of Alaska Fairbanks, 2015.


2014


Benjamin Blonder, "Venation networks link climate to plant form and function," Ph.D., University of Arizona, 2014.

Y.-Y. Chang, "Influence of point defects on the elastic properties of mantle minerals and superhard materials," Ph.D., Northwestern University, 2014.


S. Huang, "Influence of Chemical Composition and Water on the Bulk Modulus of Pyrope," Ph.D., Florida International University, 2014.

R. Karna, "Mechanistic understanding of biogeochemical transformations of trace elements in contaminated mine waste materials under reduced conditions," Ph.D., Kansas State University, 2014.


W.A. Martin, "Antimony Environmental Interactions and Sequestration Associated with Amendments at Small Arms Firing Ranges," Ph.D., Purdue University, 2014.

Morten Bormann Nielsen, "High-pressure synthesis and diamond anvil cell synchrotron diffraction studies," M.S., Aarhus University, 2014.


E.A. Tanis, "Constraints on the ability of Cl- and F- bearing aqueous fluid to dissolve and transport trace elements (Y, Nb, Zr) in subduction zone environments," Ph.D., University of Michigan, 2014.


Yongssoo Yang, "Synchrotron X-ray Diffraction Studies on Oxide Surfaces and Interfaces," Ph.D., University of Michigan, 2014.

J. Zhang, "New high pressure phase transition of natural orthoenstatite and sound velocity measurements at simultaneous high pressures and temperatures by laser heating," Ph.D., University of Illinois at Urbana-Champaign, 2014.

2013


S.J. Gaudio, "High-Pressure Structural Relaxation of Vitreous NaAlSi 3O8," Ph.D., University of California, Davis, 2013.


Carla Rosenfeld, "Heavy metal biogeochemistry: zinc and cadmium dynamics at the plant-soil interface," Ph.D., Pennsylvania State University, 2013.


K.A. Todd, “The Effects of Shear Deformation on Planetesimal Core Segregation: Results from In-situ X-ray Microtomography," Masters, Northern Illinois University, 2013.


2012


Anna Herring, "Saturation, Morphology, and Topology of Nonwetting Phase Fluid in Bentheimer Sandstone; Application to Geologic Sequestration of Supercritical CO2," M.S., Ohio State University, 2012.


Narges Milani, "Zinc oxide nanoparticles in the soil environment: dissolution, speciation, retention and bioavailability," Ph.D., University of Western Australia, 2012.


John McClain Pray, "The morphology of etched and unetched ion tracks in apatite as a function of orientation and thermal annealing," Ph.D., University of Michigan, 2012.

L. Sang, "Brillouin studies of diopside and H2O," M.S., University of Illinois at Urbana-Champaign, 2012.


2011


D.A. Brown, "On the Hydration of Majoritic Garnet," M.S., University of Texas at Austin, 2011.


G. Fu, "Development of Novel Emission Tomography System," Ph.D., University of Illinois at Urbana-Champaign, 2011.


A.J. Wall, "Abiotic Controls on Copper Isotope Fractionation during the Dissolution of Copper Sulfide Minerals," Ph.D., Pennsylvania State University, 2011.

Wei Wang, "Soil intra-aggregate pore structures under different long-term managements studied by means of computed tomography," Ph.D., Michigan State University, 2011.

2010


A. Kumar, "Spin-Charge-Lattice Coupling in Multiferroics and Strained Ferroelectrics," Ph.D., Penn State University, 2010.


2009


N.A. Miller, "Melting and Phase Relations in Iron-Silicon Alloys with Applications to the Earth's Core," Masters, University of Maryland, 2009.


2008

S.E. Afton, "The development of varying methodologies to speciate and monitor the interactions of selenium and environmental contaminants in plants," Ph.D., University of Cincinnati, 2008.


J. Han, "Transport and Retention of Viruses and Microspheres in Saturated and Unsaturated Porous Media," Ph.D., University of Delaware, 2008.


K.S. Tanwar, "Surface Structure of Hydrated and Fe(II) Reacted Hematite (1 T02) and (0001)," Ph.D., University of Alaska Fairbanks, 2008.

J. Wang, "The effect of hydration state, iron, and spin state of iron on the elasticity of mantle minerals at high pressure," Ph.D., University of Illinois at Urbana-Champaign, 2008.

2007


2006


2005


H. Couvy, "Experimental deformation of forsterite, wadsleyite and ringwoodite: Implications for seismic anisotropy of the Earth’s mantle," Ph.D., University of Bayreuth, Germany, and University of Lille, France, 2005.


2004


2003


Nagayoshi Sata, "High pressure studies on FexO: Quasi-isothermal compression experiments and applications to the Earth's core," Ph.D., University of Tokyo, 2003.


2002


Y. Arai, "Reaction dynamics and chemical speciation of phosphorus and arsenic (III and V) at the metal oxide-water interface and in soils," Ph.D., University of Delaware, 2002.


2001


2000


Undergraduate Thesis

2022