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EDUCATION

- 2004 *Ph.D. in Geological and Environmental Sciences*, Stanford University, Stanford, California. Advisor: Prof. Gordon E. Brown, Jr.
1999 *B.S. in Geology, cum laude with distinction*, University of Illinois at Urbana-Champaign, Urbana, Illinois. Advisor: Prof. Stephen P. Altaner
1998 *Wasatch-Uinta Geological Field Camp*, Park City, UT.

PROFESSIONAL EXPERIENCE

- 2015 *Guest Professor*, Institute of Biogeochemistry and Pollutant Dynamics, Swiss Federal Institute of Technology (ETH), Zürich
2013-Present *Associate Professor with tenure*, Earth and Planetary Sciences, Washington University
2012-2013 *Core Faculty Member*, Institute for Materials Science and Engineering, Washington University
2008-Present *Member*, Environmental Studies Program, Washington University
2008-2012 *Member*, Center for Materials Innovation, Washington University
2007-Present *Member*, McDonnell Center for the Space Sciences, Washington University
2007-2013 *Assistant Professor*, Earth and Planetary Sciences, Washington University
2004-2007 *Harold Urey Postdoctoral Fellow*, Environmental Research and Chemistry Divisions, Argonne National Laboratory
1999-2004 *Doctoral Candidate*, Geological and Environmental Sciences, Stanford University
1998-1999 *Undergraduate Research Assistant*, Department of Geology, University of Illinois at Urbana-Champaign
1997-1999 *Student Assistant*, National Water Quality Assessment Program, Illinois District Office, Water Resources Division, U.S. Geological Survey

PUBLICATIONS

Publication Statistics (Retrieved from ISI Web of Science on 11/23/2016)

Total Citations: 2146
Citations in 2015: 312
Average Citations per Article: 32.52
h-index: 30

Peer Reviewed Publications

* First author who is/was a student or postdoctoral researcher working with Prof. Catalano

1. *Xu T., **Catalano J.G.** (2016) Impacts of surface site coordination on arsenate adsorption: Macroscopic uptake and binding mechanisms on aluminum hydroxide surfaces. *Langmuir*, doi: 10.1021/acs.langmuir.6b03214.
2. Pan Z., Giammar D.E., Mehta V., Troyer L.D., **Catalano J.G.**, Wang Z. (2016) Phosphate-induced immobilization of uranium in Hanford sediments. *Environmental Science & Technology*, doi: 10.1021/acs.est.6b02928.
3. Pan C., Troyer L.D., **Catalano J.G.**, Giammar D.E. (2016) Dynamics of chromium(VI) removal from drinking water by iron electrocoagulation. *Environmental Science & Technology*, doi: 10.1021/acs.est.6b03637.
4. Li W., Mayo J.T., Benoit D.N., Troyer L.D., Lewicka Z.A., Lafferty B.J., **Catalano J.G.**, Lee S.S., Colvin V.L., Fortner J.D. (2016) Engineered superparamagnetic iron oxide nanoparticles for ultra-enhanced uranium separation and sensing. *Journal of Materials Chemistry A* **4**, 15022-15029.
5. *Hinkle M.A.G., Flynn E.D., **Catalano J.G.** (2016) Structural response of phyllophanates to wet aging and aqueous Mn(II). *Geochimica et Cosmochimica Acta* **192**, 220-234.
6. Fox V.K., Arvidson R.E., Guinness E.A., McLennan S.M., **Catalano J.G.**, Murchie S.L., Powell K.E. (2016) Smectite Deposits in Marathon Valley, Endeavour Crater, Mars, Identified Using CRISM Hyperspectral Reflectance Data. *Geophysical Research Letters* **43**, 4885-4892.
7. Mehta V.S., Maillot F.M., Wang Z., **Catalano J.G.**, Giammar D.E. (2016) Effect of reaction pathway on the extent and mechanism of uranium(VI) immobilization with calcium and phosphate. *Environmental Science & Technology* **50**, 3128-3136.
8. Liu Y., **Catalano J.G.** (2016) Implications for the aqueous history of Southwest Melas Chasma, Mars as revealed by interbedded hydrated sulfate and Fe/Mg smectite deposits. *Icarus* **271**, 283-291.
9. Arvidson R.E., Squyres S.W., R. V. Morris R.V., Knoll A.H., Gellert R., Clark B.C., **Catalano J.G.**, Jolliff B.L., McLennan S.M., Herkenhoff K.E., Fischer W.W., Guinness E. A., Johnson J. R., Ming D. W., Grotzinger J.P., Bell J.F. III, Yen A.S., Farrand W.H., Fox V.K., Hinkle M.A.G., Golombek M.P., Calvin W., Ruff S., Rice J.W., Desouza P.A. Jr (2016) High Concentrations of Manganese and Sulfur in Deposits on Murray Ridge, Endeavour Crater, Mars. *American Mineralogist* **101**, 1389-1405.
10. *Troyer L.D., Maillot F., Wang Z., Mehta V.S., Wang Z., Giammar D.E., **Catalano J.G.** (2016) Effect of phosphate on U(VI) sorption to montmorillonite: Ternary complexation and precipitation barriers. *Geochimica et Cosmochimica Acta* **175**, 86-99.
11. Lee S.S., Li W., Cho M., **Catalano J.G.**, Lafferty B.J., Decuzzi P., Fortner J.D. (2015) Engineered manganese oxide nanocrystals for enhanced uranyl sorption and separation. *Environmental Science: Nano* **2**, 500-508.
12. *Hinkle M.A.G., **Catalano J.G.** (2015) Effect of phosphate and sulfate on Ni repartitioning during Fe(II)-catalyzed Fe(III) oxide mineral recrystallization. *Geochimica et Cosmochimica Acta* **165**, 62-74.

13. *Chemtob S.M., Nickerson, R.D., Morris R.V., Agresti D.G., **Catalano J.G.** (2015) Synthesis and structural characterization of ferrous smectites: Implications for clay mineral genesis and detectability on Mars. *Journal of Geophysical Research: Planets* **120**, 1119-1140, doi: 10.1002/2014JE004763.
14. *Hinkle M.A.G., Wang Z., Giammar D.E., **Catalano J.G.** (2015) Interaction of Fe(II) with phosphate and sulfate on iron oxide surfaces. *Geochimica et Cosmochimica Acta* **158**, 130-146.
15. Arvidson R.E., Bell J.F., III, **Catalano J.G.**, Clark B.C., Fox V.K., Gellert R., Grotzinger J.P., Guinness E.A., Herkenhoff K.E., Jolliff B.L., Knoll A.H., Lapotre M.G.A., McLennan S.M., Ming D.W., Morris R.V., Murchie S.L., Powell K.E., Smith M.D., Squyres S.W., Wang A., Wolff M.J., Wray J.J. (2015) Mars Reconnaissance Orbiter and Opportunity observations of Burns formation and underlying strata: Crater hopping at Meridiani Planum. *Journal of Geophysical Research: Planets* **120**, 429-451.
16. Mehta V.S., Maillot F.M., Wang Z., **Catalano J.G.**, Giammar D.E. (2015) Transport of U(VI) through sediments amended with phosphate to induce in situ uranium immobilization. *Water Research* **69**, 307-317.
17. Arvidson R.E., Squyres S.W., Bell J.F., III, **Catalano J.G.**, Clark B.C., Crumpler L.S., de Souza P.A., Jr., Fairén A.G., Farrand W.H., Fox V.K., Gellert R., Ghosh A., Golombek M.P., Grotzinger J.P., Guinness E.A., Herkenhoff K.E., Jolliff B.L., Knoll A.H., Li R., McLennan S.M., Ming D.W., Mittlefehldt D.W., Moore J.M., Morris R.V., Murchie S.L., Parker T.J., Paulsen G., Rice J.W., Ruff S.W., Smith M.D., Wolff M.J. (2014) Ancient aqueous environments at Endeavour Crater, Mars. *Science* **343**, doi: 10.1126/science.1248097.
18. Mehta V.S., Maillot F., Wang Z., **Catalano J.G.**, Giammar D.E. (2014) Effect of co-solutes on the products and solubility of uranium(VI) precipitated with phosphate. *Chemical Geology* **364**, 66-75.
19. **Catalano J.G.** (2013) Thermodynamic and mass balance constraints on iron-bearing phyllosilicate formation and alteration pathways on early Mars. *Journal of Geophysical Research: Planets* **118**, 2124–2136.
20. Fraeman A.A., Arvidson R.E., **Catalano J.G.**, Grotzinger J., Morris R.V., Murchie S.L., Seelos F., Seelos K., Seelos K.D., McGovern J.A., Humm D.C., Stack K.M., Viviano C.E. (2013) A hematite-bearing layer in Gale Crater: Mapping and implications for past aqueous conditions. *Geology* **41**, 1103-1106.
21. Wang Z., Lee, S.-W., **Catalano J.G.**, Lezama-Pacheco J.S., Bargar J.R., Tebo B.M., Giammar D.E. (2013) Adsorption of uranium(VI) to manganese oxides: X-ray absorption spectroscopy and surface complexation modeling. *Environmental Science & Technology* **47**, 850-858.
22. **Catalano J.G.**, Huhmann B.L., Luo Y., Mitnick E.H., Slavney A., Giammar D.E. (2012) Metal release and speciation changes during wet aging of coal fly ashes. *Environmental Science & Technology* **46**, 11804-11812.
23. *Friedrich A.J., **Catalano J.G.** (2012) Fe(II)-mediated reduction and repartitioning of structurally incorporated Cu, Co, and Mn in iron oxides. *Environmental Science & Technology* **46**, 11070-11077.

24. Hutchinson T.J., Basappa L., Dikshit A., Luo Y., **Catalano J.G.**, Giammar D.E. (2012) Fate of metals in fly ash during aging in laboratory-scale ash ponds. *Environmental Engineering Science* **29**, 1085-1091.
25. *Friedrich A.J., Rapponotti B.W., Scherer M.M., Bachman J.E., Engelhard M.H., **Catalano J.G.** (2012) Inhibition of trace element release during Fe(II)-activated recrystallization of Al-, Cr-, and Sn-substituted goethite and hematite. *Environmental Science & Technology* **46**, 10031-10039.
26. Liu Y., Arvidson R.E., Wolff M.J., Mellon M.T., **Catalano J.G.**, Wang A., Bishop J.L. (2012) Lambert albedo retrieval and analyses over Aram Chaos from OMEGA hyperspectral imaging data. *Journal of Geophysical Research* **117**, E00J11.
27. *Friedrich A.J., **Catalano J.G.** (2012) Distribution and speciation of trace elements in iron and manganese oxide cave deposits. *Geochimica et Cosmochimica Acta* **91**, 240-253.
28. Singh A., **Catalano J.G.**, Ulrich K.-U., Giammar D.E. (2012) Molecular-scale structure of uranium(VI) immobilized with goethite and phosphate. *Environmental Science & Technology* **46**, 6594-6603.
29. *Friedrich A.J., **Catalano J.G.** (2012) Controls on Fe(II)-activated trace element release from goethite and hematite. *Environmental Science & Technology* **46**, 1519-1526.
30. **Catalano J.G.**, Luo Y., Otemuyiwa B.T. (2011) Effect of aqueous Fe(II) on arsenate sorption on goethite and hematite. *Environmental Science & Technology* **45**, 8826-8833.
31. *Friedrich A.J., Luo Y., **Catalano J.G.** (2011) Trace element cycling through iron oxide minerals during redox-driven dynamic recrystallization. *Geology* **39**, 1083-1086.
32. *Luo Y., Giammar D.E., Huhmann B.L., **Catalano J.G.** (2011) Speciation of selenium, arsenic, and zinc in Class C fly ash. *Energy & Fuels* **25**, 2980-2987.
33. Weinstein C., Moynier F., Wang K., Paniello R., Foriel J., **Catalano J.G.**, Pichat S. (2011) Isotopic fractionation of Cu in plants. *Chemical Geology* **286**, 266-271.
34. *Friedrich A.J., Hasenmueller E.A., **Catalano J.G.** (2011) Composition and structure of nanocrystalline Fe and Mn oxide cave deposits: Implications for trace element mobility in karst systems. *Chemical Geology* **284**, 82-96.
35. **Catalano J.G.** (2011) Weak interfacial water ordering on isostructural hematite and corundum (001) surfaces. *Geochimica et Cosmochimica Acta* **75**, 2062-2071.
36. Cull S.C., Arvidson R.E., **Catalano J.G.**, Ming D.W., Morris R.V., Mellon M.T., Lemmon M. (2010) Concentrated perchlorate at the Mars Phoenix landing site: Evidence for thin film liquid water on Mars. *Geophysical Research Letters* **37**, L22203, doi:10.1029/2010GL045269.
37. Arvidson R.A., Bell J.F., III, Bellutta P., Cabrol N.A., **Catalano J.G.**, Cohen J., Crumpler L., Des Marais D.J., Estlin T., Farrand W., Gellert R., Grant J.A., Greenberger R., Guinness E.A., Herkenhoff K.E., Herman J.A., Iagnemma K., Johnson J.R., Klingelhöfer G., Li R., Lichtenberg K.A., Maxwell S., Ming D.W., Morris R.V., Rice M., Ruff S., Shaw A., Siebach K., de Souza P., Stroupe A., Squyres S.W., Sullivan R.J., Talley K., Townsend J., Wang A., Wright J., Yen A. (2010) Spirit Mars rover mission: Overview and selected results from the northern Home Plate winter haven to the side of Scamander crater. *Journal of Geophysical Research* **115**, E00F03.

38. Fenter P., Lee S.S., Park C., **Catalano J.G.**, Zhang Z., Sturchio N.C. (2010) Probing interfacial reactions with X-ray reflectivity and X-ray reflection interface microscopy: Influence of NaCl on the dissolution of orthoclase at pOH 2 and 85 °C. *Geochimica et Cosmochimica Acta* **74**, 3396-3411.
39. **Catalano J.G.** (2010) Relaxations and interfacial water ordering at the corundum (110) surface. *The Journal of Physical Chemistry C* **114**, 6624-6630.
40. **Catalano J.G.**, Fenter P., Park C., Zhang Z., Rosso K.M. (2010) Structure and oxidation state of hematite surfaces reacted with aqueous Fe(II) at acidic and neutral pH. *Geochimica et Cosmochimica Acta* **74**, 1498-1512.
41. Brown C.F., Serne J.R., **Catalano J.G.**, Krupka K.M., Icenhower J.P. (2010) Mineralization of contaminant uranium and leach rates in sediments from Hanford, Washington. *Applied Geochemistry* **25**, 97-104.
42. **Catalano J.G.**, Fenter P.A., Park C. (2009) Water ordering and relaxations at the hematite (110)-water interface. *Geochimica et Cosmochimica Acta* **73**, 2242-2251.
43. Zeng H., Singh A., Basak S., Ulrich K.-U., Biswas P., **Catalano J.G.**, Giammar, D.E. (2009) Nanoscale size effects on uranium (VI) adsorption to hematite nanoparticles. *Environmental Science & Technology* **43**, 1373–1378.
44. Singer D.M., Johnson S.B., **Catalano J.G.**, Farges F., Brown G.E. Jr. (2008) Sequestration of Sr(II) by calcium oxalate – A batch uptake study and EXAFS analysis of model compounds and reaction products. *Geochimica et Cosmochimica Acta* **72**, 5055-5069.
45. **Catalano J.G.**, Park C., Fenter P., Zhang Z. (2008) Simultaneous inner- and outer-sphere arsenate adsorption on corundum and hematite. *Geochimica et Cosmochimica Acta* **72**, 1986-2004.
46. **Catalano J.G.**, Fenter P., Park C. (2007) Interfacial water structure on the (012) surface of hematite: Ordering and reactivity in comparison with corundum. *Geochimica et Cosmochimica Acta* **71**, 5313-5324.
47. Tanwar K., **Catalano J.G.**, Petitto S.C., Ghose S.K., Eng P.J., Trainor T.P. (2007) Hydrated α -Fe₂O₃ (1102) surface structure: Role of surface preparation. *Surface Science* **601**, L59-L64.
48. **Catalano J.G.**, Zhang Z., Park C., Fenter P., Bedzyk M.J. (2007) Bridging arsenate surface complexes on the hematite (012) surface. *Geochimica et Cosmochimica Acta* **71**, 1883-1897.
49. Tanwar K., Lo C., Eng P.J., **Catalano J.G.**, Brown G.E., Jr., Waychunas G.A., Chaka A.M., Trainor T.P. (2007) Surface diffraction study of the hydrated hematite (1102) surface. *Surface Science* **601**, 460-474.
50. Zhang Z., Fenter P., Kelly S.D., **Catalano J.G.**, Bandura A., Kubicki J.D., Sofo J., Wesolowski D.J., Machesky M.L., Sturchio N.C., Bedzyk M.J. (2006) Structure of Zn²⁺ at the TiO₂ (110) – aqueous solution interface: Comparison of X-ray standing wave, X-ray absorption spectroscopy and density functional theory results. *Geochimica et Cosmochimica Acta* **70**, 4039-4056.
51. Fenter P., **Catalano J.G.**, Park C., Zhang Z. (2006) On the use of CCD area detectors for high resolution specular X-ray reflectivity. *Journal of Synchrotron Radiation* **13**, 293-303.

52. **Catalano J.G.**, Park C., Zhang Z., Fenter P. (2006) Termination and water adsorption at the α -Al₂O₃ (012)-aqueous solution interface. *Langmuir* **22**, 4668-4673.
53. **Catalano J.G.**, McKinley J.P., Zachara J.M., Heald S.M., Smith S.C., and Brown G.E., Jr. (2006) Changes in uranium speciation through a depth sequence of contaminated Hanford sediments. *Environmental Science & Technology* **40**, 2517-2524.
54. **Catalano J.G.**, Zhang Z. Fenter P., Bedzyk M.J. (2006) Inner-sphere surface complexation of Se(IV) on the hematite (100) surface. *Journal of Colloid and Interface Science* **297**, 665-671.
55. Waychunas G.A., Trainor T.P., Eng P.J., **Catalano J.G.**, Brown G.E., Jr., Davis J.A., Rogers J., Bargar J.R. (2005) Surface complexation studied via combined grazing-incidence EXAFS and surface diffraction: Arsenate on hematite (0001) and (1012). *Analytical and Bioanalytical Chemistry* **383**, 12-27.
56. Pierce E.M., Icenhower J.P., Serne R.J., **Catalano J.G.** (2005) Experimental determination of UO₂ (cr) dissolution kinetics: effects of solution saturation state and pH. *Journal of Nuclear Materials* **345**, 206-218.
57. Wellman D.M., **Catalano J.G.**, Icenhower J.P., Gamedinger A.P. (2005) Synthesis and characterization of sodium meta-autunite, Na₂[(UO₂)(PO₄)₂ · 3H₂O. *Radiochimica Acta* **93**, 393-399.
58. **Catalano J.G.**, Trainor T.P., Eng P.J., Waychunas G.A., Brown G.E., Jr. (2005) CTR diffraction and grazing-incidence EXAFS study of U(VI) adsorption onto α -Al₂O₃ and α -Fe₂O₃ (1102) surfaces. *Geochimica et Cosmochimica Acta* **69**, 3555-3572.
59. **Catalano J.G.**, Brown G.E., Jr. (2005) Uranyl adsorption onto montmorillonite: Evaluation of binding sites and carbonate complexation. *Geochimica et Cosmochimica Acta* **69**, 2995-3005.
60. Wang Z., Zachara J.M., Gassman P.L., Liu C., Qafoku O., Yantasee W., **Catalano, J.G.** (2005) Fluorescence spectroscopy of U(VI)-silicates and U(VI)-contaminated Hanford sediment. *Geochimica et Cosmochimica Acta* **69**, 1391-1403.
61. **Catalano J.G.**, Warner J.A., Brown G.E., Jr. (2005) Sorption and precipitation of Co(II) in Hanford sediments and alkaline aluminate solutions. *Applied Geochemistry* **20**, 193-205.
62. Brown G.E., Jr., **Catalano J.G.**, Templeton A.S., Trainor T.P., Farges F., Bostick B.C., Kendelewicz T., Doyle C.S., Spormann A.M., Revill K., Morin G., Juillot F., Calas G. (2005) Environmental interfaces, heavy metals, microbes, and plants: Applications of XAFS spectroscopy and related synchrotron radiation methods to environmental sciences. *Physica Scripta* **T115**, 80-87.
63. Trainor T.P., Chaka A.M., Eng P.J., Newville M., Waychunas G.A., **Catalano J.G.**, Brown G.E., Jr. (2004) Structure and reactivity of the hydrated hematite (0001) surface. *Surface Science* **573**, 204-224.
64. **Catalano J.G.**, Brown G.E., Jr. (2004) Analysis of uranyl-bearing phases by EXAFS spectroscopy: Interferences, multiple scattering, accuracy of structural parameters, and spectral differences. *American Mineralogist* **89**, 1004-1021.
65. **Catalano J.G.**, Heald S.M., Zachara J.M., Brown G.E., Jr. (2004) Spectroscopic and diffraction study of uranium speciation in contaminated vadose zone sediments from the Hanford Site, Washington State. *Environmental Science & Technology* **38**, 2822-2828.

66. Zachara J.M., Ainsworth C.C., Brown G.E., Jr., **Catalano J.G.**, McKinley J.P., Qafoku O., Smith S.C., Szecsody J.E., Traina S.J., Warner J.A. (2004) Chromium speciation and mobility in a high level nuclear waste vadose zone plume. *Geochimica et Cosmochimica Acta* **68**, 13-30.
67. Helean K.B., Navrotsky A., Lumpkin G.R., Colella M., Lian J., Ewing R.C., Ebbinghaus B., **Catalano J.G.** (2003) Enthalpies of formation of U-, Th-, Ce-brannerite: implications for plutonium immobilization. *Journal of Nuclear Materials* **320**, 231-244.
68. Helean K.B., Navrotsky A., Vance E.R., Carter M.L., Ebbinghaus B., Krikorian O., Lian J., Wang L.M., **Catalano J.G.** (2002) Enthalpies of formation of Ce-pyrochlore, $\text{Ca}_{0.93}\text{Ce}_{1.00}\text{Ti}_{2.035}\text{O}_{7.00}$, U-pyrochlore, $\text{Ca}_{1.46}\text{U}^{4+}_{0.23}\text{U}^{6+}_{0.46}\text{Ti}_{1.85}\text{O}_{7.00}$ and Gd-pyrochlore, $\text{Gd}_2\text{Ti}_2\text{O}_7$: Three materials relevant to the proposed waste form for excess weapons plutonium. *Journal of Nuclear Materials* **303**, 226-239.
69. Chambers S.A., Farrow R.F.C., Maat S., Toney M.F., Folks L., **Catalano J.G.**, Trainor T.P., Brown G.E., Jr. (2002) Molecular beam epitaxial growth and properties of CoFe_2O_4 on $\text{MgO}(001)$. *Journal of Magnetism and Magnetic Materials* **246**, 124-139.

Publications in Review

1. *Hinkle M.A.G., Dye K.G., **Catalano J.G.** (2016) Impact of Mn(II)-manganese oxide reactions on trace element fate. Submitted to *Environmental Science & Technology*.

Publications in Preparation

Manuscripts for which full drafts are completed and submission is expected soon

1. *Gadol H.J., Flynn E.D., **Catalano J.G.** (2016) Oxalate promotes trace-metal release from crystalline iron oxides under aerobic conditions.
2. *Nickerson R.D., Chemtob S.M., **Catalano J.G.** (2016) Detrital transport and preservation of hydrothermal clays on Mars.
3. Stein N.T., Arvidson R.E., O'Sullivan J.A., **Catalano J.G.**, Guinness E.A., Politte D.V., Finkel J. (2016) Retrieval of compositional endmembers from Mars Exploration Rover Opportunity alpha particle X-ray spectrometer observations at Marathon Valley, Endeavor Crater.
4. *Flynn E.D., **Catalano J.G.** (2016) Nickel adsorption to iron oxides in the presence of oxalate.
5. Lützenkirchen J., Franks G.V., Plaschke M., Zimmermann R., Heberling F., Abdelmonem A., Darbha G., Schild D., Filby A., Eng P.J., **Catalano J.G.**, Rosenqvist J., Preocanin T., Aytug T., Gan Y., Zhang D., Braunschweig B. (2016) The surface chemistry of sapphire 0001: A literature review and a study on various factors influencing its IEP.

Peer Reviewed Conference Proceedings

1. Brown G.E., Jr., Kendelewicz T., Trainor T.P., Tanwar K.S., Chaka A.M., Eng P.J., Yamamoto S., Nilsson A., Bluhm H., Starr D.E., Salmeron M., **Catalano J.G.**, Yoon T.Y., Benzerara K., Morin G., Ona-Nguema G., Juillot F., Cances B., Farges F., Calas G. (2007) Recent advances in surface, interface, and environmental geochemistry. In: *Water-Rock Interaction, Proceedings of the 12th International Symposium on Water-Rock*

Interaction, Kunming, China, July 31 - August 5, 2007 (eds. T. Bullen and Y. Wang).
Taylor and Francis, London.

2. **Catalano J.G.**, Brown G.E., Jr. (2004) EXAFS study of uranyl adsorption on Wyoming montmorillonite. In: *Water-Rock Interaction, Proceedings of the 11th International Symposium on Water-Rock Interaction, Saratoga Springs, NY, June 27-July 2, 2004* (eds. R.B. Wanty and R.R. Seal II). A.A. Balkema Publishers, Leiden, The Netherlands. Vol. 1, pp. 665-670.

Technical Reports

1. **Catalano J.G.**, Zachara J.M., Brown G.E., Jr. (2002) *X-ray Spectroscopic Investigation of the Distribution and Speciation of Uranium in Samples from the BX-102 Borehole*. B-BX-BY FIR: Digest of S&T Evaluations. United States Department of Energy, Richland Operations, Richland, WA 99352.
2. Wang Z., Zachara J.M., Gassman P.L., Liu C.X., **Catalano J.G.** (2002) *Fluorescence Spectroscopic Studies of Uranium-Bearing Vadose Zone Sediments*. B-BX-BY FIR: Digest of S&T Evaluations. United States Department of Energy, Richland Operations, Richland, WA 99352.
3. Serne R.J., Brown C.F., Schaef H.T., Pierce E.P., Lindberg M.J., Wang Z., Gassman P., **Catalano J.G.** (2002) *300 Area Uranium Leach and Adsorption Project Report*. ERC FY01-02 Final Report. United States Department of Energy, Richland Operations, Richland, WA 99352.
4. **Catalano J.G.**, Warner J.A., Chen C.-C., Yamakawa I., Newville M., Sutton S.R., Ainsworth C.C., Zachara J.M., Traina S.J., Brown G.E., Jr. (2001) *Speciation of Chromium in Hanford Tank Farm SX-108 and 41-09-39 Core Samples Determined by X-ray Absorption Spectroscopy*. S-SX FIR Appendix E: Digest of S&T Evaluations. United States Department of Energy, Richland Operations, Richland, WA 99352.

Theses

1. “Molecular Scale Studies of Uranium Speciation in Contaminated Hanford, Washington Sediments and Related Model Systems” Ph.D. dissertation, Stanford University, 2004. *Advisor*: Prof. Gordon E. Brown, Jr.
2. “Geochemical Investigation into the Source of Natural Arsenic Contamination in the Mahomet Valley Aquifer, East-Central Illinois” B.S. thesis, University of Illinois at Urbana-Champaign, 1999. *Advisor*: Prof. Stephen P. Altaner

Student Advisee Theses

1. Margaret A. G. Hinkle, “Ion Interactions at the Mineral-Water Interface During Biogeochemical Iron and Manganese Cycling” Ph.D. dissertation, May 2015, Washington University.
2. Andrew J. Friedrich, “Trace Element Cycling during Iron(II)-activated Recrystallization of Iron(III) Oxide Minerals” Ph.D. dissertation, May 2012, Washington University.

PRESENTATIONS

Invited/Keynote

1. Catalano J.G., Dye K.G., Chen H., Flynn E.D., Frierdich A.J., Gadol H.J., Hinkle M.A.G. (2016) Element and isotopic repartitioning during low-temperature mineral recrystallization: Implications for trace metal proxies. Invited oral presentation at the *Fall 2016 Meeting of the American Geophysical Union*, December 2016, San Francisco, CA.
2. Catalano J.G., Troyer L.D., Maillot F., Giammar D.E., Mehta V., Pan Z., Wang Z. (2016) XAFS spectroscopic studies of uranium speciation at mineral-water and sediment-water interfaces. Invited oral presentation at the *3rd International Workshop on Advanced Techniques in Actinide Spectroscopy*, November 2016, Richland, WA.
3. Catalano J.G. (2016) Surface X-ray Scattering Studies of Ion Adsorption, Redox Reactions, and Water Structure at Mineral-Fluid Interfaces: Recent Observations and New Possibilities with the APS Upgrade. Invited oral presentation at the *2016 APS/CNM Users Meeting*, May 2016, Argonne, IL.
4. Catalano J.G., Bradley A.S., Crompton N.M., Giammar D.E., Chambers L.G., Hasenmueller E.A. (2016) Evaluating Trace Metal Limitations on Methane Fluxes in Terrestrial Ecosystems. Invited oral presentation at the *2016 DOE Environmental System Science PI Meeting*, April 2016, Potomac, MD.
5. Catalano J.G. (2016) Basalt Alteration without Air: Anoxic Clays and Their Implications for Early Mars and the Early Earth. Invited oral presentation at the *Caltech Division of Geological and Planetary Sciences Seminar Series*, February 2016, Pasadena, CA.
6. Catalano J.G. (2016) Element Repartitioning during Low-Temperature Mineral Recrystallization: Implications for Trace Metal Proxies. Invited oral presentation at the *2016 Geobiology Gordon Conference*, February 2016, Galveston, TX.
7. Catalano J.G., Chemtob S.M., Nickerson R.D., Morris R.V. (2015) Ferrous Smectites and the Redox Evolution of Early Mars. Invited oral presentation at the *2015 Annual Meeting of the Geological Society of America*, November 2015, Baltimore, MD.
8. Catalano J.G., Hinkle M.A.G. (2015) Contrasting Effects on Trace Element Fate of Iron and Manganese Oxide Transformations Induced by Electron Transfer Reactions. Keynote oral presentation at the *2015 Goldschmidt Conference*, August 2015, Prague, Czech Republic.
9. Catalano J.G. (2015) Molecular Interactions of Uranium and Phosphate in Subsurface Sediments. Invited oral presentation at the *Paul Scherrer Institut*, May 2015, Villigen, Switzerland.
10. Catalano J.G. (2015) Mineral Transformations at Redox Interfaces and the Fate of Contaminants and Micronutrients. Invited oral presentation at the *Department of Environmental Geosciences, University of Vienna*, April 2015, Vienna, Austria.
11. Catalano J.G. (2015) Mineral Transformations at Redox Interfaces and the Fate of Contaminants and Micronutrients. Invited oral presentation at the *Swiss Federal Institute of Aquatic Science and Technology (EAWAG)*, March 2015, Dübendorf, Switzerland.
12. Catalano J.G. (2015) Mineral Transformations at Redox Interfaces and the Fate of Contaminants and Micronutrients. Invited oral presentation at the *Institute for Biogeochemistry and Pollutant Dynamics, ETH Zürich*, March 2015, Zürich, Switzerland.

13. Catalano J.G., Becker K.G., Flynn E.D., Frierdich A.J., Gadol H.J., Hinkle M.A.G., Luo Y. (2014) Trace element redistribution during iron oxide recrystallization. Invited oral presentation at *Telluride Science Research Center Workshop: Biogeochemistry and Redox Transformations of Iron*, August 2014, Telluride, CO.
14. Catalano J.G., Becker K.G., Flynn E.D., Frierdich A.J., Gadol H.J., Hinkle M.A.G. (2014) Trace element partitioning between iron oxides and aqueous solutions: Evidence for recrystallization. Invited oral presentation at the *2014 Goldschmidt Conference*, June 2014, Sacramento, CA.
15. Catalano J.G., Giammar D.E., Mehta V., Maillot F., Wang Z., Pan Z., Troyer L.D., Wang Z. (2014) Dominant mechanisms of uranium-phosphate reactions in subsurface sediments. Invited oral presentation at the *Joint TES/SBR Principal Investigator Meeting*, May 2014, Potomac, MD.
16. Catalano J.G. (2013) Effect of mineral surface transformations during biogeochemical iron cycling on the fate of contaminants and micronutrients. Invited oral presentation at *Northwestern University, Environmental Engineering and Sciences Seminar Series*, October 2013, Evanston, IL.
17. Catalano J.G. (2013) Trace element and contaminant fate during Fe(II)-catalyzed iron oxide surface transformations. Invited oral presentation at the *23rd Goldschmidt Conference*, August 2013, Florence, Italy.
18. Catalano J.G. (2013) Dynamic Mineral Surface Transformations during Biogeochemical Iron Cycling and the Fate of Trace Elements and Contaminants. Keynote oral presentation at the *96th Canadian Chemistry Conference*, May 2013, Québec City, Canada.
19. Catalano J.G. (2013) Dynamic Mineral Surface Transformations during Biogeochemical Iron Cycling and the Fate of Trace Elements and Contaminants. Invited oral presentation at the international workshop *Iron Biogeochemistry - From Molecular Processes to Global Cycles*, March 2013, Ascona, Switzerland.
20. Catalano J.G. (2012) Molecular Mechanisms of Mineral-Water Interface Processes Affecting Uranium Fate. Invited oral presentation at the international workshop *Uranium Biogeochemistry: Transformations and Applications*, March 2012, Ascona, Switzerland.
21. Catalano J.G. (2012) Dynamic Mineral Surface Transformations during Biogeochemical Iron Cycling and the Fate of Trace Elements and Contaminants. Invited oral presentation at the *Department of Earth and Atmospheric Sciences, Saint Louis University*, January 2012, Saint Louis, MO.
22. Catalano J.G. (2012) Geochemical Applications of Interfacial X-ray Scattering. Invited oral presentation at the *X-ray Interface Science at Advanced Photon Source: New Sector Development* workshop, January 2012, Argonne, IL.
23. Catalano J.G. (2011) Mineral-Water Interface Processes Affecting Uranium Fate in Contaminated Sediments. Invited oral presentation at the *Fall 2011 Meeting of the American Geophysical Union*, December 2011, San Francisco, CA.
24. Catalano J.G., Frierdich A.J., Luo Y., Fenter P., Park C., Rosso K.M. (2011) Surface Transformations and Element Cycling Resulting from Interfacial Fe(II)-Fe(III) Self Exchange. Invited oral presentation at the *21st Goldschmidt Conference*, August 2011, Prague, Czech Republic.
25. Catalano J.G. (2010) Mineral-Water Interface Processes Affecting Contaminant Fate and

- Iron Redox Cycling. Invited oral presentation at the *University of Delaware, Delaware Environmental Institute*, October 2010, Newark, DE.
26. Catalano J.G., Brown G.E., Jr. (2010) Uranyl Adsorption onto Montmorillonite: Complexity and Ongoing Challenges. Keynote oral presentation at the *20th Goldschmidt Conference*, June 2010, Knoxville, TN.
 27. Catalano J.G. (2010) Application of Surface X-ray Scattering to the Study of Actinide Chemistry at Environmental Interfaces. Invited oral presentation at the *Advanced Photon Source Users Meeting*, May 2010, Argonne, IL.
 28. Catalano J.G., Fenter P., Park C., Zhang Z. (2009) Interfacial Water Ordering and Complex Oxoanion Adsorption on Hematite and Corundum Surfaces. Invited oral presentation at the *2009 Annual Meeting of the Geological Society of America*, October 2009, Portland, OR.
 29. Catalano J.G. (2009) Interfacial Water Ordering, Complex Ion Adsorption, and Redox-Driven Nanoscale Transformations at Mineral-Water Interfaces. Invited oral presentation at *Missouri University of Science and Technology, Department of Physics*, October 2009, Rolla, MO.
 30. Catalano J.G. (2008) Potential Applications of Resonant X-ray Scattering in Molecular Environmental Science. Invited oral presentation at *Synchrotron Environmental Science IV*, December 2008, San Francisco, CA.
 31. Catalano J.G., Fenter P., Park C., Rosso K.M. (2008) Water ordering and redox process at hematite-water interfaces. Keynote oral presentation at the *2008 Annual Meeting of the Geological Society of America*, October 2008, Houston, TX.
 32. Catalano J.G. (2007) Mineral-water interface processes affecting arsenic fate and iron redox cycling. Invited oral presentation at Stony Brook University, *Department of Geosciences and the Consortium for Inter-Disciplinary Environmental Research*, March 2007, Stony Brook, NY.
 33. Catalano J.G. (2007) Mineral-water interface processes affecting arsenic fate and iron redox cycling. Invited oral presentation at *Texas A&M University, Department of Geology and Geophysics, ConocoPhillips Colloquium Series*, March 2007, College Station, TX.
 34. Catalano J.G. (2007) Mineral-water interface processes affecting arsenic fate and iron redox cycling. Invited oral presentation at *Washington University in St. Louis, Department of Earth and Planetary Sciences*, March 2007, St. Louis, MO.
 35. Catalano J.G. (2007) Mineral-water interface processes affecting contaminant fate and biogeochemical cycling. Invited oral presentation at the *University of Oklahoma, School of Geology and Geophysics, Shell Colloquium Series*, February 2007, Norman, OK.
 36. Catalano J.G. (2007) Geochemistry of leaking nuclear waste at the Hanford site. Invited oral presentation at the *University of Oklahoma, School of Geology and Geophysics, Brown Bag Seminar*, February 2007, Norman, OK.
 37. Catalano J.G. (2007) Mineral-aqueous solution interfaces: Structure, ion adsorption, and redox processes. Invited oral presentation to the *Argonne National Laboratory, Heavy Element and Separation Science group*, January 2007, Argonne, IL.
 38. Catalano J.G. (2006) Mineral-water interface processes affecting contaminant fate and biogeochemical cycling. Invited oral presentation at the *Johns Hopkins University, Department of Earth and Planetary Sciences, Bromery Lecture Series*, November 2006,

Baltimore, MD.

39. Catalano J.G. (2006) Mineral-water interface processes affecting contaminant fate and biogeochemical cycling. Invited oral presentation at *Stony Brook University, Department of Geosciences and the Center for Environmental Molecular Science*, October 2006, Stony Brook, NY.
40. Catalano J.G. (2006) Mineral-water interface processes affecting contaminant fate and biogeochemical cycling. Invited oral presentation at the *University of Miami, Department of Geological Sciences*, May 2006, Coral Gables, FL.
41. Catalano J.G. (2006) Using molecular geochemistry to affect cleanup decisions at the Hanford site. Invited oral presentation at the *University of Miami, Center for Ecosystem Science and Policy*, May 2006, Coral Gables, FL.
42. Catalano J.G. (2006) Molecular-level geochemical processes controlling the fate of uranium in the environment. Invited oral presentation at the *University of Tennessee, Department of Earth and Planetary Sciences*, February 2006, Knoxville, TN.
43. Catalano J.G. (2005) Interactions of environmental contaminants with metal oxide surfaces. Invited oral presentation at *Northwestern University Center for Catalysis and Surface Science Seminar Series*, September 2005, Evanston, IL.
44. Catalano J.G. (2005) Molecular-level geochemical processes controlling the fate of uranium in the environment. Invited oral presentation at *University of Illinois at Chicago Earth & Environmental Sciences Department Seminar*, September 2005, Chicago, IL.
45. Catalano J.G., Wang Z., McKinley J.P., Zachara J.M., Heald S.M., Brown G.E., Jr. (2005) Probing uranium speciation in contaminated Hanford sediments. Invited oral presentation at *The 15th Annual Goldschmidt Conference*, May 2005, Moscow, ID.
46. Catalano J.G. (2005) Molecular-level geochemical processes controlling the fate of uranium in the environment. Invited oral presentation at the *University of Colorado, Department of Geological Sciences*, February 2005, Boulder, CO.
47. Catalano J.G. (2004) Probing uranium speciation in contaminated sediments and at the mineral-water interface. Invited oral presentation at *University of Illinois at Urbana-Champaign Geology Department Colloquium*, October 2004, Urbana, IL.
48. Catalano J.G., Heald S.M., Zachara J.M., Trainor T.P., Eng P.J., Waychunas G.A., Brown G.E., Jr. (2004) Synchrotron-based studies of uranium speciation in contaminated sediments and related model systems. Invited oral presentation at *Actinide-XAS-2004: 3rd Workshop of Speciation, Techniques, and Facilities for Radioactive Materials at Synchrotron Light Sources*, September 2004, Berkeley, CA.
49. Catalano J.G. (2004) X-ray spectroscopic studies of uranium speciation in 300 Area samples. Invited oral presentation at *Workshop on Conceptual Model Development and Reactive Transport Modeling for the 300 Area Uranium Plume in 300-FF-5*, May 2004, Richland, WA.
50. Catalano J.G., Zachara J.M., McKinley J.M., Heald S.M., and Brown G.E., Jr. (2003) X-ray spectroscopic and diffraction study of the distribution and speciation of uranium in contaminated sediments from the DOE's Hanford site. Invited oral presentation at the *30th Annual Stanford Synchrotron Radiation Laboratory Users' Meeting*, October 2003, Menlo Park, CA.
51. Catalano J.G., Warner J. A., Brown G.E., Jr. (2001) Spectroscopic Studies of Radionuclide

Speciation in Model Systems and Contaminated Sediments. Invited oral presentation at the *Conference of the 2000-2001 Corning Foundation Science Fellows*, May 2001, Corning, NY.

Volunteered

1. Catalano J.G., Hinkle M.A.G., Flynn E.D. (2016) Effect of dissolved Mn(II) and organic acids on Mn oxide structure and metal binding. Oral presentation at the *2016 Goldschmidt Conference*, June 2016, Yokohama, Japan.
2. Catalano J.G., Chemtob S.M., Nickerson R.D., Morris R.V., Agresti D.G. (2016) Ferrous Smectites and the Redox Evolution of Early Mars. Oral presentation at the *46th Lunar and Planetary Science Conference*, March 2016, The Woodlands, TX.
3. Catalano J.G., Xu T. (2016) Response of Interfacial Water to Arsenate Adsorption: Effects of Surface Coverage and pH. Oral presentation at the *251st National Meeting of the American Chemical Society*, March 2016, San Diego, CA.
4. Catalano J.G., Xu T. (2015) Impact of Surface Functional Group Coordination State on the Response of Interfacial Water Structure to Arsenate Adsorption. Oral presentation at the *2015 Goldschmidt Conference*, August 2015, Prague, Czech Republic.
5. Catalano J.G. (2013) Adsorbate-Induced Restructuring of Interfacial Water. Oral presentation at the *245th National Meeting of the American Chemical Society*, April 2013, New Orleans, LA.
6. Catalano J.G., Beehr A.R. (2013) Theoretical and Experimental Constraints on the Formation and Alteration of Iron-Bearing Phyllosilicates on Mars. Poster presentation at the *44th Lunar and Planetary Science Conference*, March 2013, The Woodlands, TX.
7. Catalano J.G., Beehr A.R., Arvidson R.E. (2012) Thermodynamic and Mass Balance Constraints on Phyllosilicate and Evaporite Formation Scenarios on Early Mars. Poster presentation at the *Third International Conference on Early Mars*, May 2012, Incline Village, NV.
8. Catalano J.G., Beehr A.R. (2011) Thermodynamic Predictions of Phyllosilicate Assemblages Produced under Mars-Relevant Weathering and Alteration Scenarios. Poster presentation at *Fall 2011 Meeting of the American Geophysical Union*, December, 2011, San Francisco, CA.
9. Catalano J.G., Fenter P., Park C., Zhang Z. (2010) Complexity of Arsenate Adsorption at Iron and Aluminum Oxide-Water Interfaces. Poster presentation at *Fall 2010 Meeting of the American Geophysical Union*, December, 2010, San Francisco, CA.
10. Catalano J.G., Friedrich, A.J., Luo, Y., Fenter P., Park C., Zhang Z., Rosso, K.M. (2010) Fe(II)-Driven Iron Oxide Surface Transformations and the Fate of Trace Elements and Contaminants. Oral presentation at *Fall 2010 Meeting of the American Geophysical Union*, December, 2010, San Francisco, CA. Talk was given as last minute replacement for a speaker unable to attend the meeting due to travel difficulties.
11. Catalano J.G. (2010) Probing Interfacial Water Structure and Arsenic Adsorption on Iron and Aluminum Oxides using Surface X-ray Scattering. Poster presentation at the *Cross-Cut Review of Interface and Liquid Surface Scattering Science at the Advanced Photon Source*, October 2010, Argonne, IL.

12. Catalano J.G. (2010) Fe(II)-Induced Structural Transformations of Hematite Surfaces and Their Impact on Contaminants. Oral presentation at the *20th Goldschmidt Conference*, June 2010, Knoxville, TN.
13. Catalano J.G., Fenter P., Park C., Zhang Z. (2009) Interfacial water ordering and complex oxoanion adsorption on hematite and corundum surfaces. Oral presentation at the *19th Goldschmidt Conference*, June 2009, Davos, Switzerland.
14. Catalano J.G., Fenter P., Park C., Rosso K.M. (2009) Orientation-dependent hematite-Fe(II) reactions at acidic and neutral pH. Oral presentation at the *237th National Meeting of the American Chemical Society*, March 2009, Salt Lake City, UT.
15. Catalano J.G., Fenter P., Park C., Zhang Z. (2009) New insight into arsenate adsorption on iron and aluminum oxide surfaces. Oral presentation at the *237th National Meeting of the American Chemical Society*, March 2009, Salt Lake City, UT.
16. Catalano J.G. (2008) Geochemistry of leaking nuclear waste at the Hanford site. Oral presentation at *Washington University, Department of Earth & Planetary Sciences, Brown Bag Seminar*, April 2008, St. Louis, MO.
17. Catalano J.G., Fenter P., Park C., Zhang Z. (2008) Simultaneous inner- and outer-sphere arsenate adsorption on iron and aluminum oxide surfaces. Oral presentation at the *235th National Meeting of the American Chemical Society*, April 2008, New Orleans, LA.
18. Catalano J.G., Fenter P., Park C., Zhang Z., Rosso K. (2007) Adsorption and redox processes at mineral-water interfaces: Recent insights and future predictions. Oral presentation at the *2007 GSA Annual Meeting*, October 2007, Denver, CO.
19. Catalano J.G., Park C., Zhang Z., Fenter P. (2006) Simultaneous inner- and outer-sphere arsenate adsorption on iron and aluminum oxide surfaces. Oral presentation at the *2006 GSA Annual Meeting*, October 2006, Philadelphia, PA.
20. Catalano J.G., Park C., Zhang Z., Fenter P. (2006) Simultaneous inner- and outer-sphere As(V) adsorption on iron and aluminum oxide surfaces. Oral presentation at the *19th General Meeting of the International Mineralogical Association*, July 2006, Kobe, Japan.
21. Catalano J.G., Park C., Zhang Z., Fenter P. (2006) Resonant anomalous x-ray reflectivity studies of As(V) adsorption on iron and aluminum oxide surfaces. Oral presentation at the *13th International Conference on X-ray Absorption Fine Structure (XAFS13)*, July 2006, Stanford, CA.
22. Catalano J.G. (2006) X-ray scattering studies of the interactions of environmental contaminants with metal oxide surfaces. Oral presentation at the *Advanced Photon Source, Surface & Interface Scattering Science Interest Group*, May 2006, Argonne, IL.
23. Catalano J.G., Park C., Zhang Z., Fenter P. (2006) Resonant anomalous x-ray reflectivity studies of As(V) adsorption on iron and aluminum oxide surfaces. Poster presentation at the *2006 Users' Meeting for the Advanced Photon Source*, May 2006, Argonne, IL.
24. Catalano J.G., Park C., Zhang Z., Fenter P. (2006) Simultaneous inner- and outer-sphere As(V) adsorption on α -Al₂O₃. Oral presentation at the *231th National Meeting of the American Chemical Society*, March 2006, Atlanta, GA.
25. Catalano J.G., Zhang Z., Fenter P., Bedzyk M.J. (2005) XSW studies of oxoanion adsorption at the hematite-water interface. Poster presentation at the *Workshop on In-Situ Characterization of Surface and Interface Structures and Processes*, September 2005, Argonne, IL.

26. Catalano J.G., Trainor T.P., Eng P.J., Waychunas G.A., Brown G.E., Jr. (2005) Surface x-ray scattering and spectroscopy studies of U(VI) adsorption on corundum and hematite single-crystal surfaces. Oral presentation at the 229th National Meeting of the American Chemical Society, March 2005, San Diego, CA.
27. Catalano J.G. and Brown G.E., Jr. (2004) EXAFS study of uranyl adsorption on Wyoming montmorillonite. Oral presentation at *WRI-11: The 11th International Symposium on Water-Rock Interaction*, June/July 2004, Saratoga Springs, NY.
28. Catalano J.G., and Brown G.E., Jr. (2003) Spectroscopic study of uranyl adsorption on Wyoming montmorillonite: Factors affecting surface complexation. Oral presentation at *Classic Clays and Minerals: The Clay Minerals Society 40th Annual Meeting and Mineralogical Society of America Spring Meeting*, June 2003, Athens, GA.
29. Catalano J.G., Zachara J.M., McKinley J.M., Heald S.M., and Brown G.E., Jr. (2003) X-ray spectroscopic and diffraction study of the distribution and speciation of uranium in contaminated sediments from the DOE's Hanford site. Oral presentation at the 225th National Meeting of the American Chemical Society, March 2003, New Orleans, LA.
30. Catalano J.G., Zachara J.M., McKinley J.M., Heald S.M., and Brown G.E., Jr. (2002) X-ray Spectroscopic Investigation of the Distribution and Speciation of Uranium in Contaminated Sediments From the DOE's Hanford Site. Oral presentation at the *American Geophysical Union 2002 Fall Meeting*, December 2002, San Francisco, CA.
31. Catalano J.G., Zachara J.M., and Brown G.E., Jr. (2002) X-ray Spectroscopic Investigation of the Distribution and Speciation of Uranium in Contaminated Sediments From the DOE's Hanford Site. Poster presentation at the 29th Annual Stanford Synchrotron Radiation Laboratory Users' Meeting, October 2002, Menlo Park, CA.
32. Catalano J.G., Warner J.A., Ainsworth C.C., Zachara J.M., Traina S.J., and Brown G.E., Jr. (2002) XAFS studies of chromium and uranium speciation in Hanford vadose zone sediments. Oral presentation at the 223rd National Meeting of the American Chemical Society, April 2002, Orlando, FL.
33. Catalano J.G., Warner J.A., Ainsworth C.C., Zachara J.M., Traina S.J., and Brown G.E., Jr. (2001) X-ray Spectroscopic Study of the Speciation Of Chromium in Hanford S-SX Tank Farm Core Samples. Poster presentation at the 28th Annual Stanford Synchrotron Radiation Laboratory Users' Meeting, October 2001, Menlo Park, CA.
34. Catalano J.G. and Brown G.E., Jr. (2001) XAFS Spectroscopic Investigation of Co and U Speciation in Model Hanford Tank Waste Systems. Poster presentation at the 28th Annual Stanford Synchrotron Radiation Laboratory Users' Meeting, October 2001, Menlo Park, CA.
35. Catalano J.G., Warner J.A., Chen C.-C., Yamakawa I., Newville M., Sutton S.R., Ainsworth C.C., Zachara J.M., Traina S.J., and Brown G.E., Jr. (2001) X-ray spectroscopic and fluorescence study of the speciation and distribution of chromium in Hanford S-SX Tank Farm core samples. Oral presentation at the 222nd National Meeting of the American Chemical Society, August 2001, Chicago, IL
36. Catalano J.G., Warner J.A., and Brown G.E., Jr. (2001) Spectroscopic investigation of Co and U speciation in model leachate-solid systems. Poster presentation at the 222nd National Meeting of the American Chemical Society, August 2001, Chicago, IL

37. Catalano J.G., Altaner S.P., and Warner K.L. (1999) Geochemical Investigation of the Source of Natural Arsenic Contamination in the Mahomet Valley Aquifer, East-Central Illinois. Poster presentation at the *Geological Society of America, North-Central Region Spring Meeting 1999*, April 1999, Champaign, IL.

Presentations by Student and Postdoctoral Advisees

1. Xu T., Catalano J.G. (2016) Effect of surface functional group coordination on As(V) adsorption on aluminum hydroxide surfaces. Oral presentation at the *2016 Goldschmidt Conference*, June 2016, Yokohama, Japan.
2. Nickerson R.D., Chemtob S.M., Catalano J.G. (2016) Clay formation and metal repartitioning during isochemical hydrothermal basalt alteration. Oral presentation at the *2016 Goldschmidt Conference*, June 2016, Yokohama, Japan.
3. Nickerson R.D., Chemtob S.M., Catalano J.G. (2016) Clay Formation and Iron Partitioning During Anoxic Isochemical Hydrothermal Basalt Alteration: Implications for Formation of Fe Smectites on Early Mars. Poster presentation at the *46th Lunar and Planetary Science Conference*, March 2016, The Woodlands, TX.
4. Katz S.D., Nickerson R.D., Ehlmann B.L., Catalano J.G. (2016) Synthesis and analysis of synthetic smectite clays for use as spectral standards. Invited oral presentation at the *46th Lunar and Planetary Science Conference*, March 2016, The Woodlands, TX.
5. Xu T., Catalano J.G. (2016) Impacts of surface site coordination on arsenate adsorption: Macroscopic uptake, competitive adsorption, and binding mechanisms on aluminum hydroxide surfaces. Oral presentation at the *251st National Meeting of the American Chemical Society*, March 2016, San Diego, CA.
6. Flynn E.D., Catalano J.G., Gadol H.J. (2016) Effects of oxalate on Ni adsorption and repartitioning during Fe(II)-promoted iron oxide recrystallization. Oral presentation at the *251st National Meeting of the American Chemical Society*, March 2016, San Diego, CA.
7. Flynn E.D., Catalano J.G. (2015) The fate of Ni during oxalate and Fe(II)-promoted iron oxide recrystallization. Poster presentation at the *2016 Geobiology Gordon Conference*, February 2016, Galveston, TX.
8. Troyer L.D., Catalano J.G. (2015) Nucleation Behavior of U(VI) Phosphate in the Presence of Mineral Surfaces. Oral presentation at the *2015 Goldschmidt Conference*, August 2015, Prague, Czech Republic.
9. Flynn E.D., Catalano J.G. (2015) The Influence of Oxalate on Ni Cycling through Iron Oxides. Poster presentation at the *2015 Goldschmidt Conference*, August 2015, Prague, Czech Republic.
10. Nickerson R.D., Chemtob S.M., Catalano J.G. (2015) Partitioning of iron and trace metals during isochemical hydrothermal basalt alteration: Implications for interpreting clay occurrence on mars. Oral presentation at the *46th Lunar and Planetary Sciences Conference*, March 2015, The Woodlands, TX.
11. Troyer L.D., Catalano J.G. (2014) Nucleation of Uranyl Phosphate Precipitates in the Presence of Mineral Surfaces. Poster presentation at *Synchrotron Environmental Science VI*, September 2014, Argonne, IL.
12. Nickerson R.D., Chemtob S.M., Catalano J.G. (2014) Phyllosilicate formation and trace

- element partitioning during isochemical hydrothermal basalt alteration. Poster presentation at the *Eighth International Conference on Mars*, July 2014, Pasadena, CA.
13. Becker K.G., Catalano J.G., Moynier F. (2014) Connecting zinc partitioning and isotope fractionation during Fe(II)-catalyzed recrystallization of Fe(III) oxide minerals. Oral presentation at the *2014 Goldschmidt Conference*, June 2014, Sacramento, CA.
 14. Blake K., Catalano J.G. (2014) The effect of hematite morphology on As(V) adsorption. Poster presentation at the *2014 Goldschmidt Conference*, June 2014, Sacramento, CA.
 15. Chemtob S.M., Catalano J.G., Savage P.S., Moynier F. (2014) Si isotope fractionation during iron-silica aqueous interaction in the Precambrian ocean. Poster presentation at the *2014 Goldschmidt Conference*, June 2014, Sacramento, CA.
 16. Nickerson R.D., Chemtob S.M., Catalano J.G. (2014) Phyllosilicate formation and trace element partitioning during isochemical hydrothermal basalt alteration. Poster presentation at the *45th Lunar and Planetary Sciences Conference*, March 2014, The Woodlands, TX.
 17. Chemtob S.M., Nickerson S.M., Catalano J.G. (2014) Ferrous iron smectites and their oxidative products: Implications for clay formation and alteration on Mars. Poster presentation at the *45th Lunar and Planetary Sciences Conference*, March 2014, The Woodlands, TX.
 18. Becker K.G., Catalano J.G. (2013) Connecting zinc partitioning and isotope fractionation during Fe(II)-catalyzed recrystallization of Fe(III) oxide minerals. Poster presentation at the *2013 Midwest Geobiology Conference*, September 2013, Indianapolis, IN.
 19. Hinkle M.A.G., Catalano J.G. (2013) Effect of phosphate and sulfate on Fe(II)-catalyzed trace metal incorporation into and release from Fe(III) oxides. Oral presentation at the *23rd Goldschmidt Conference*, August 2013, Florence, Italy.
 20. Maillot F., Mehta V.S., Catalano J.G., Giammar D.E., Wang Z. (2013) Effects of aqueous phosphate on U(VI) sorption on montmorillonite and goethite. Oral presentation at the *23rd Goldschmidt Conference*, August 2013, Florence, Italy.
 21. Hinkle M.A.G., Catalano J.G. (2013) Interaction of phosphate and sulfate with aqueous Fe(II) on Fe(III) oxide surfaces. Poster presentation at the *245th National Meeting of the American Chemical Society*, April 2013, New Orleans, LA.
 22. Hinkle M.A.G., Catalano J.G. (2012) Interaction of Fe(II) with phosphate and sulfate on iron oxide surfaces: Implications for interfacial electron transfer. Poster presentation at the *22nd Goldschmidt Conference*, June 2012, Montreal, Canada.
 23. Maillot F., Catalano J.G., Giammar D.E. (2012) U(VI) sorption on montmorillonite in the presence of phosphate. Poster presentation at the *22nd Goldschmidt Conference*, June 2012, Montreal, Canada.
 24. Beehr A.R., Catalano J.G. (2012) Oxidation Pathways of Ferrous Iron Phyllosilicates: Insights into Martian Phyllosilicate Formation. Poster presentation at the *Third International Conference on Early Mars*, May 2012, Incline Village, NV.
 25. Beehr A.R. and Catalano J.G. (2011) Oxidation Pathways of Ferrous Iron Phyllosilicates: Insights into Martian Phyllosilicate Formation. Poster presentation at the *Fall 2011 National Meeting of the American Geophysical Union*, December 2011, San Francisco, CA.

26. Frierdich A.J. and Catalano J.G. (2011) Aqueous Fe(II) Drives Trace Element Cycling through Crystalline Fe(III) Oxides: Effects of Substituting Metal, Solution Composition, and Co-Doping. Oral presentation at the 242nd National Meeting of the American Chemical Society, August 2011, Denver, CO.
27. Frierdich A.J. and Catalano J.G. (2011) Fe(II)-Induced Trace Element Release from Crystalline Iron Oxides. Poster presentation at the 21st Goldschmidt Conference, August 2011, Prague, Czech Republic.
28. Frierdich A.J. and Catalano J.G. (2010) Fate of Ni, Cu, And Zn during Atom Exchange between Aqueous Fe(II) and Metal(II)-Substituted Goethite and Hematite. Oral presentation at the 2010 Annual Meeting of the Geological Society of America, October 2010, Denver, CO.
29. Beehr A.R. and Catalano J.G. (2010) Martian Analogs: Synthesis, Characterization, and Oxidation of Ferrous Iron Phyllosilicates. Poster presentation at the 20th Goldschmidt Conference, June 2010, Knoxville, TN.
30. Beehr A.R. and Catalano J.G. (2010) Synthesis of Ferrous Iron Phyllosilicates and Subsequent Oxidation as an Analog for Martian Phyllosilicates. Poster presentation at the 41st Lunar and Planetary Science Conference, March 2010, The Woodlands, TX.
31. Frierdich A.J. and Catalano J.G. (2009) Nanocrystalline Iron and Manganese Oxide Deposits in Pautler Cave: Implications for Heavy Metal Transport and Sequestration in a Shallow Karst Aquifer. Poster presentation at the 2009 Annual Meeting of the Geological Society of America, October 2009, Portland, OR.
32. Desai D. (2009) Modeling nitrate contribution to stream networks via surface runoff in urban ecosystems: Implications of land-use change. Poster presentation at the Washington University 2009 GIS Symposium, November 2009, St. Louis, MO. Awarded first prize.

EXTERNAL RESEARCH FUNDING

Current

1. **National Science Foundation (NSF)**, Division of Chemistry, Program in Environmental Chemical Sciences, *Collaborative Research: Interfacial Water Restructuring: An Unrecognized Contribution to Mineral Surface Reactivity*, 2015-2018, PI with co-PI Sara Mason (U. Iowa), \$480,000 total, Catalano portion: \$240,000.
2. **National Aeronautics and Space Administration (NASA)**, Planetary Science Division, Solar System Workings Program, *Identifying and Quantifying Phyllosilicate-Bearing Materials on Solar System Bodies*, 2015-2018, co-PI with PI Bethany Ehlmann (Caltech) and co-PI Phil Christensen (Arizona State U.), \$398,383 total, Catalano portion: \$64,806.
3. **National Aeronautics and Space Administration (NASA)**, Planetary Science Division, Mars Fundamental Research Program, *Experimental Constraints on Mineralogical and Compositional Changes during Basalt Alteration and Phyllosilicate Formation under Mars-Relevant Conditions*, 2014-2017, PI with co-PI Richard Morris (Johnson Space Center), \$340,327 total, Catalano portion: \$279,639.

4. **National Science Foundation (NSF)**, CAREER Program and the Division of Earth Sciences, Program in Geobiology and Low Temperature Geochemistry, *CAREER: Nanoscale Mineral Transformations during Biogeochemical Cycling and the Fate of Trace Elements and Nutrients*, 2011-2017, sole PI, \$460,000.

Past

1. **Department of Energy (DOE)**, Office of Biological and Environmental Research, Subsurface Biogeochemical Research Program, *Evaluating Trace Metal Limitations on Methane Fluxes in Terrestrial Ecosystems*, 2015-2016, PI with co-PIs Alex Bradley, Daniel Giammar, Lisa Chambers (Saint Louis U.), and Elizabeth Hasenmueller (Saint Louis U.), \$100,000 total, Catalano portion: \$84,000.
2. **National Science Foundation (NSF)**, Division of Chemical, Bioengineering, Environmental, and Transport Systems, Program in Environmental Engineering, *Performance and Mechanisms of Iron Electrocoagulation for Removal of Chromium(VI) from Drinking Water*, 2013-2016, co-PI with PI Daniel Giammar and co-PI Frédéric Moynier, \$330,000 total, Catalano portion: \$123,000.
3. **National Science Foundation (NSF)**, Division of Chemical, Bioengineering, Environmental, and Transport Systems and the Major Research Instrumentation Program, *MRI: Acquisition of an X-ray/Ultraviolet Photoelectron Spectrometer (XPS/UPS)*, 2013-2015, co-PI with PI John Fortner and co-PI Parag Banarjee, \$521,043.
4. **Department of Energy (DOE)**, Office of Biological and Environmental Research, Subsurface Biogeochemical Research Program, *Dominant Mechanisms of Uranium-Phosphate Reactions in Subsurface Sediments*, 2011-2015, PI with co-PIs Daniel Giammar (EECE) and Zheming Wang (Pacific Northwest National Laboratory), \$765,000 total, Catalano portion: \$375,815.
5. **National Aeronautics and Space Administration (NASA)**, Planetary Science Division, Mars Fundamental Research Program, *Iron-Bearing Phyllosilicate Clay Formation Pathways: Mineralogical Constraints on Past Martian Environmental Conditions*, 2011-2015, sole PI, \$214,159.
6. **National Science Foundation (NSF)**, Division of Earth Sciences, Major Research Instrumentation Program, *MRI: Acquisition of SIMS Instrument*, 2012-2015, co-PI with David Fike (PI), Philip Skemer, Christine Floss, and Ernst Zinner, \$2,071,491.
7. **National Science Foundation (NSF)**, Division of Earth Sciences, Instrumentation and Facilities Program, *Early Career: Acquisition of a Powder X-ray Diffractometer for Earth Science Research and Education at Washington University in St. Louis*, 2012-2014, sole PI, \$175,000.
8. **National Science Foundation (NSF)**, Division of Earth Sciences, Program in Geobiology and Low Temperature Geochemistry, *ETBC: Hidden Iron Oxide Redox Processes During Biogeochemical Iron Cycling: Controls on Nanoscale Transformations and the Fate of Contaminants*, 2008-2012, sole PI, \$340,505.

9. **ACS Petroleum Research Fund**, Type G New Faculty Starter Grant, *Iron Oxide Morphology and Composition as Possible Indicators of Sedimentary Redox Cycling*, 2008-2010, sole PI, \$50,000.

INTERNAL RESEARCH FUNDING

Past

1. **Consortium for Clean Coal Utilization**, Washington University, *Iron Electrocoagulation for Efficient Removal of Selenium from Flue Gas Desulfurization Wastewaters*, 2015-2016, Co-PI with Daniel Giammar (PI, EECE), \$63,703 total, Catalano portion: \$13,885.
2. **International Center for Advanced Renewable Energy and Sustainability (I-CARES)**, Washington University, *Assessing Heavy Metal Exposure from Urban Gardening*, 2015-2016, Co-PI with Daniel Giammar (PI, EECE), Zorimar Rivera-Núñez (co-PI, Social Work), Aaron Hipp (co-PI, Social Work), \$40,000 total, Catalano portion: \$3176.
3. **Center for Materials Innovation (CMI)**, Washington University, *Synthesis and Transformations of Iron(III) Oxide Nanoparticles: Influence of Iron(II) Reactions at the Solid-Water Interface*, 2008-2010, Co-PI with Daniel Giammar (PI, EECE), Young-Shine Jun (EECE), Pratim Biswas (EECE), and Jill Pasteris (EPSc), \$17,480 (Catalano portion).
4. **Consortium for Clean Coal Utilization**, Washington University, *Life Cycles of Metals in Coal Combustion: Metal Release and Capture, Speciation in Flyash, and Transformations During Ash Reuse and Storage*, 2009-2012, Co-PI with Daniel Giammar (PI, EECE), Pratim Biswas (EECE), Anil Dikshit (Indian Institute of Technology), and Jiming Hao (Tsinghua University), \$350,000 total, Catalano portion: \$21,005.
5. **International Center for Advanced Renewable Energy and Sustainability (I-CARES)**, Washington University, *Constraining Cu cycling in soil-plant systems using Cu stable isotopes*, 2011-2012, Co-PI with Frédéric Moynier (PI), \$40,000 total, Catalano portion: \$5800.
6. **International Center for Advanced Renewable Energy and Sustainability (I-CARES)**, Washington University, *Interfacial chemistry of arsenic in groundwater and water treatment systems*, 2011-2012, Co-PI with Daniel Giammar (PI, EECE), \$35,000 total, Catalano portion: \$5000.
7. **International Center for Advanced Renewable Energy and Sustainability (I-CARES)**, Washington University, *Photoelectrochemical splitting of H₂O using Earth-abundant hematite nanocrystals*, 2013-2014, Co-PI with PI Parag Banarjee and co-PI Pratim Biswas, \$42,600 total, Catalano portion: \$5580.
8. **International Center for Advanced Renewable Energy and Sustainability (I-CARES)**, Washington University, *Synergistic effects of iron reduction and ligand controlled dissolution on iron uptake by plants*, 2013-2014, Co-PI with PI Daniel Giammar and collaborators Stephan Kraemer and Ivan Baxter, \$42,753 total, Catalano portion: \$2677.

HONORS, AWARDS, AND FELLOWSHIPS

- 2011-2016 NSF Faculty Early Career Development (CAREER) Award
2012 Advanced Photon Source Annual Report Science Highlight
2008 Nominee, Packard Fellowship for Science and Engineering, Washington University
2004-2007 Harold Urey Postdoctoral Fellowship, Argonne National Laboratory
2004 Advanced Photon Source Annual Report Science Highlight
2004 Stanford Synchrotron Radiation Laboratory Science Highlight
2003 Student Travel Grant, 40th Annual Meeting of the Clay Mineral Society
2002 Outstanding Student Presentation, Volcanology, Geochemistry, and Petrology Section, American Geophysical Union Fall Meeting
2002 Graduate Student Poster Prize, Environmental Sciences, 29th Annual Stanford Synchrotron Radiation Laboratory Users Meeting
2000-2001 Corning Foundation Science Fellow, Stanford University
1999 USGS STAR Award, Water Resources Division, U.S. Geological Survey
1999 Geology Alumni Award for the Outstanding Senior in Geology, University of Illinois
1998 Rocky Mountain Alumni Field Camp Scholarship, University of Illinois
1998 Estwing Award for the Outstanding Junior in Geology, University of Illinois

TEACHING EXPERIENCE

Washington University, Associate Professor, 2013-Present, Assistant Professor, 2007-2013

Courses Taught

1. EPSc/EnSt 444 Environmental Geochemistry, Fall 2016, 3 units, enrollment: 22
2. EPSc/EnSt 413 Introduction to Soil Science, Spring 2016, 3 units, enrollment: 18
3. EPSc 595 Seminar: Professional Development in Earth and Planetary Sciences, Fall 2015, 1 unit, enrollment: 9
4. EPSc 140 Freshman Seminar: Geology and Human Health, Fall 2015, 3 units, enrollment: 11
5. EPSc/EnSt 444 Environmental Geochemistry, Fall 2014, 3 units, enrollment: 29
6. EPSc/EnSt 413 Introduction to Soil Science, Spring 2014, 3 units, enrollment: 26
7. EPSc 500 Geochemical and Biogeochemical Reaction Modeling, Spring 2014, 3 units, enrollment: 7
8. EPSc 595 Seminar: Professional Development in Earth and Planetary Sciences, Fall 2013, 1 unit, enrollment: 10
9. EPSc 511: Minerals in Aqueous Environmental, Fall 2013, 3 units, enrollment: 12
10. EPSc/EnSt 413 Introduction to Soil Science, Spring 2013, 3 units, enrollment: 18
11. EPSc/EnSt 444 Environmental Geochemistry, Fall 2012, 3 units, enrollment: 20
12. EPSc 511: Minerals in Aqueous Environmental, Fall 2011, 3 units, enrollment: 4
13. EPSc/EnSt 413 Introduction to Soil Science, Spring 2011, 3 units, enrollment: 10
14. EPSc 500 Geochemical and Biogeochemical Reaction Modeling, Spring 2011, 3 units, enrollment: 9
15. EPSc/EnSt 444 Environmental Geochemistry, Fall 2010, 3 units, enrollment: 12
16. EPSc/EnSt 413 Introduction to Soil Science, Spring 2010, 3 units, enrollment: 11

17. EPSc 511: Minerals in Aqueous Environmental, Fall 2009, 3 units, enrollment: 12
18. EPSc/EnSt 413 Introduction to Soil Science, Spring 2009, 3 units, enrollment: 18
19. EPSc/EnSt 444 Environmental Geochemistry, Fall 2008, 3 units, enrollment: 17
20. EPSc/EnSt 323 Biogeochemistry, Spring 2008, 3 units, enrollment: 29

Guest Lectures

1. ARCH 355 Interdisciplinary Ecosystems Principles Integration, Fall 2014
2. EPSc/EnSt 323 Biogeochemistry, Spring 2012
3. LAND 462 Landscape Materials, Spring 2011
4. EPSc/EnSt 323 Biogeochemistry, Spring 2009
5. Env/ChE 443 Environmental Chemistry, Fall 2007

Independent Study Projects Supervised

1. Spring 2010, Muey Saetern (History Graduate Student), Integrating Soil Science in History Education
2. Fall 2009, Muey Saetern (History Graduate Student), Soils in Agricultural Systems
3. Spring 2009, Devki Desai (EnSt Undergraduate), Biogeochemical Impacts of Building Materials
4. Spring 2008, Lonja Friedlander (EPSc Undergraduate), Geochemical Modeling

ETH Zürich, Guest Professor, 2015

1. Short Course: Advanced Synchrotron Techniques for Characterizing Molecular-Scale Processes at Environmental Interfaces, June 2015, 1 unit, enrollment: 9.

Stanford University, Teaching Assistant, 1999-2000

1. GES 170 Environmental Geochemistry, Winter 2000
2. GES 80 Earth Materials, Fall 1999

MENTORING/ADVISING ACTIVITIES

Washington University

2012-Present *Undergraduate Academic Advisor*, Department of Earth and Planetary Sciences
2008-Present *Director of Graduate Studies*, Department of Earth and Planetary Sciences
2007-2009 *Undergraduate Academic Advisor*, Environmental Studies Program

Stanford University

2001-2003 *Undergraduate Academic Advisor*, Undergraduate Advising Center
2000-2004 *Graduate Student Mentor*, Department of Geological and Environmental Sciences

ADVISING OF RESEARCH BY STUDENTS AND POSTDOCTORAL SCHOLARS

Postdoctoral Scholar

Yun Luo (2009 – 2011)

Fabien Maillot (2011 – 2013)
Steven M. Chemtob (2013 – 2015)
Lyndsay D. Troyer (2014 – 2016)
Nyssa M. Crompton (2015 – 2016)

Graduate Students

Andrew Frierdich (2008 – 2012, Ph.D.)
Alison Beehr (2009 – 2012, A.M.)
Margaret Anne Gray Hinkle (2010 – 2015, Ph.D.)
Katherine Becker (2012 – 2015, A.M.)
Karyn Blake (2012 – 2014, A.M.)
Ryan Nickerson (2012 – Present)
Tingying Xu (2013 – Present)
Elaine Flynn (2013 – Present)
Yuanji Sun (2015 – 2016)
Huan Liu (2015 – 2017, Visiting Ph.D. Student from Nanjing University)
Kaushik Mitra (2016 – Present)
Robert Kupper (2016 – Present)
Jinshu Yan (2016 – Present)

Undergraduate Students

Matthew Ampleman (2008 – 2009)
Brittany Huhmann (2008 – 2010): Completed senior honors thesis
Suzanne Knittel (2009 – 2010)
Kathryn 'Alex' Clark (2009 – 2010)
Devki Desai (2009)
John Coveyou (2010)
Elizabeth Mitnick (2011 – 2013): Completed senior honors thesis
Adam Slavney (2011)
Alison Tune (2011 – 2014): Completed senior honors thesis
Beth Hoagland (2013): Completed senior honors thesis
Hayley Gadol (2013 – 2015): Completed senior honors thesis
Michaela Rodriguez (2013 – 2014)
Margaret Beetstra (2014)
Matthew Kim (2014)
Sydney Katz (2014 – 2016)
Emma Searson (2015 – 2016): Completed senior honors thesis
Claire Elias (2016)
Addie Nakatani (2016 – Present)
Andrew White (2016 – Present)

High School Students

Zachary Gornet (Summer 2009)
Vivek Biswas (Summer 2010)
Brett Rapponotti (Summer 2011)
Kristen Buehne (Summer 2012)

Brian Ji (Summer 2013)
Eric Zhu (Summer 2013)
Xuechun Qian (Summer 2015)
Rebekah Greenspan (Summer 2016)
Anthony Chen (Summer 2016)

Student Committees (excluding students supervised by Prof. Catalano)

Ph.D. Oral Examination Committees

1. James Noel, Fall 2007, Energy, Environmental, and Chemical Engineering (advisor: D.E. Giammar)
2. Abhas Singh, Fall 2007, Energy, Environmental, and Chemical Engineering (advisor: D.E. Giammar)
3. Elizabeth Hasenmueller, Fall 2008, Earth & Planetary Sciences (advisor: R.E. Criss)
4. Luke Olsen, Fall 2008, Earth & Planetary Sciences (advisor: R.F. Dymek)
5. Yang Liu, Spring 2010, Earth & Planetary Sciences (advisor: R.E. Arvidson)
6. Zhen Li, Spring 2010, Earth & Planetary Sciences (advisor: J.D. Pasteris)
7. Yin Wang, Fall 2010, Energy, Environmental, and Chemical Engineering (advisor: D.E. Giammar)
8. Abigail Fraemen, Spring 2011, Earth & Planetary Sciences (advisor: R.E. Arvidson)
9. Garrecht Metzger, Spring 2011, Earth & Planetary Sciences (advisor: D.A. Fike)
10. Andrew Wreschnig, Spring 2011, Earth & Planetary Sciences (advisor: J.R. Smith)
11. Zimeng Wang, Fall 2011, Energy, Environmental, and Chemical Engineering (advisor: D.E. Giammar)
12. Fei Wang, Spring 2012, Energy, Environmental, and Chemical Engineering (advisor: D.E. Giammar)
13. Jonathan Lewis, Spring 2012, Earth & Planetary Sciences (advisor: J.R. Smith)
14. Xiaofei Wang, Spring 2012, Energy, Environmental, and Chemical Engineering (advisor: P. Biswas)
15. Wenlu Li, Fall 2012, Energy, Environmental, and Chemical Engineering (advisor: J.D. Fortner)
16. Vrajesh Mehta, Fall 2012, Energy, Environmental, and Chemical Engineering (advisor: D.E. Giammar)
17. Lin Wang, Spring 2013, Energy, Environmental, and Chemical Engineering (advisor: D.E. Giammar)
18. Amanda Bender, Spring 2014, Earth & Planetary Sciences (advisor: A. S. Bradley)
19. Jianxin Gao, Spring 2014, Earth & Planetary Sciences (advisor: D.A. Fike)
20. Valerie Fox, Spring 2014, Earth & Planetary Sciences (advisor: R.A. Arvidson)
21. Kathryn Powell, Spring 2015, Earth & Planetary Sciences (advisor: R.A. Arvidson)
22. Chao Pan, Fall 2015, , Energy, Environmental, and Chemical Engineering (advisor: D.E. Giammar)
23. Zezhen Pan, Fall 2015, Energy, Environmental, and Chemical Engineering (advisor: D.E. Giammar)

Ph.D. Dissertation Committees

1. Katherine Adelsberger, Spring 2008, Earth & Planetary Sciences (advisor: J.R. Smith)
2. Stephanie Kuster, Summer 2009, Earth & Planetary Sciences (advisor: J.D. Pasteris)

3. Sandra Wiseman, Summer 2009, Earth & Planetary Sciences (advisor: R.E. Arvidson)
4. Cynthia Fadem, Summer 2009, Earth & Planetary Sciences (advisor: J.R. Smith)
5. Nancy Hsia Akerman, Fall 2009, Earth & Planetary Sciences (advisor: J.P. Amend)
6. Kimberly Lichtenberg, Spring 2010, Earth & Planetary Sciences (advisor: R.E. Arvidson)
7. Abhas Singh, Summer 2010, Energy, Environmental, and Chemical Engineering (advisor: D.E. Giammar)
8. David Heeszal, Summer 2011, Earth & Planetary Sciences (advisor: D.A. Wiens)
9. Elizabeth Hasenmueller, Fall 2011, Earth & Planetary Sciences (advisor: R.E. Criss)
10. Yin Wang, Fall 2012, Energy, Environmental, and Chemical Engineering (advisor: D.E. Giammar)
11. Yang Liu, Summer 2013, Earth & Planetary Sciences (advisor: R.E. Arvidson)
12. Fei Wang, Fall 2013, Energy, Environmental, and Chemical Engineering (advisor: D.E. Giammar)
13. Zimeng Wang, Fall 2013, Energy, Environmental, and Chemical Engineering (advisor: D.E. Giammar)
14. Christopher Markle, Fall 2013, Physics (advisor: R. Cowsik)
15. Randall Paniello, Fall 2013, Earth & Planetary Sciences (advisor: F. Moynier)
16. Zhen Li, Fall 2013, Earth & Planetary Sciences (advisor: J.D. Pasteris)
17. Abigail Fraemen, Spring 2014, Earth & Planetary Sciences (advisor: R.E. Arvidson)
18. Xiaofei Wang, Spring 2014, Energy, Environmental, and Chemical Engineering (advisor: P. Biswas)
19. Vrajesh Mehta, Summer 2014, Energy, Environmental, and Chemical Engineering (advisor: D.E. Giammar)
20. Garrecht Metzger, Fall 2014, Earth & Planetary Sciences (advisor: D.A. Fike)
21. Lin Wang, Spring 2015, Energy, Environmental, and Chemical Engineering (advisors: D.E. Giammar, J.D. Fortner)
22. Wenlu Li, Fall 2015, Energy, Environmental, and Chemical Engineering (advisor: J.D. Fortner)

M.S. Committees

1. Karen Poole, Summer 2008, Earth & Planetary Sciences (advisor: J.R. Smith)
2. David Mayer, Summer 2009, Earth & Planetary Sciences (advisor: R.E. Arvidson)
3. Darren Johnson, Summer 2009, Earth & Planetary Sciences (advisor: B.L. Jolliff)
4. Matthew Zahra, Spring 2010, Earth & Planetary Sciences (advisor: R.F. Dymek)

Undergraduate Thesis Committees

1. Lonia Friedlander, Spring 2008, Earth & Planetary Sciences (advisor: R.E. Arvidson)
2. Gregory Finkelstein, Spring 2008, Earth & Planetary Sciences (advisor: J.D. Pasteris)
3. Kimberly Wallis, Spring 2008, Earth & Planetary Sciences (advisor: J.R. Smith)
4. Devki Desai, Summer 2009, Environmental Studies (advisor: J.G. Catalano)
5. Matthew Ampleman, Summer 2010, Earth & Planetary Sciences (advisor: D.A. Fike)
6. Jason Boettger, Spring 2011, Earth & Planetary Sciences (advisor: J.P. Amend)
7. Stephanie Spera, Spring 2011, Earth & Planetary Sciences (advisor: R.E. Arvidson)
8. Kirsten Sieback, Spring 2011, Earth & Planetary Sciences (advisor: R.E. Arvidson)
9. Rachel Folkerts, Spring 2012, Earth & Planetary Sciences (advisor: D.A. Fike)
10. Daniel Johnson, Spring 2014, Earth & Planetary Sciences (advisor: D.A. Fike)

11. Christopher Thom, Spring 2014, Earth & Planetary Sciences (advisor: D.A. Fike)
12. Nathan Stein, Spring 2015, Earth & Planetary Sciences (advisor: R.E. Arvidson)

OUTREACH ACTIVITIES

1. Mentor, Summer research internships for high school students, Students and Teachers as Researchers (STARS) Program, 2009-Present
2. Lecture for graduate students on novel synchrotron methods at the 4th Synchrotron Environmental Science Meeting, San Francisco, CA, December 2008.
3. Panelist, Green Action's 7th Hour Panel Discussion, "Facts and Fission... nuclear power and the 2008 election", Washington University, October 30, 2008.

PROFESSIONAL SERVICE AND ACTIVITIES

Professional Society Memberships

Geological Society of America (GSA), American Geophysical Union (AGU), The Geochemical Society (GS), Mineralogical Society of America (MSA), European Association of Geochemistry (EAG), American Chemical Society (ACS), International XAFS Society

Reviewer for Scholarly Journals

American Mineralogist, Applied and Environmental Microbiology, Canadian Mineralogist, Chemical Geology, Chemosphere, Environmental Science & Technology, Frontiers in Microbiological Chemistry, Geochemical Journal, Geochimica et Cosmochimica Acta, Geology, Geosphere, Icarus, Journal of the American Chemical Society, Journal of Colloid and Interface Science, Journal of Contaminant Hydrology, Journal of Environmental Management, Journal of Environmental Monitoring, Journal of Environmental Radioactivity, Journal of Geophysical Research – Planets, Journal of Hazardous Materials, Journal of Physical Chemistry, Langmuir, Ore Geology Reviews, Proceedings of the National Academy of Science, Science of the Total Environment, Scientific Reports, Surface Science, Thermochemica Acta

Reviewer/Panelist for Funding Agencies and User Facilities

- 2016-Present **Member**, Molecular Environmental and Interfacial Science Proposal Review Panel, Stanford Synchrotron Radiation Lightsource
- 2015-Present **Reviewer**, National Aeronautics and Space Administration, Solar System Workings Program
- 2012-Present **Reviewer**, Romanian National Council for Scientific Research
- 2010-Present **Reviewer**, National Science Foundation, Earth Sciences, Instrumentation and Facilities Program
- 2008-Present **Reviewer**, National Science Foundation, Geobiology and Low-Temperature Geochemistry Program
- 2004-Present **Reviewer**, Stanford Synchrotron Radiation Lightsource User Proposals
- 2016 **Reviewer**, National Aeronautics and Space Administration, Planetary Data Archiving, Restoration, and Tools Program
- 2016 **Reviewer**, National Aeronautics and Space Administration, NASA Earth and Space Science Fellowships Program

- 2016 **Reviewer**, American Chemical Society Petroleum Research Fund
2015 **Reviewer**, UK Space Agency
2015 **Reviewer**, Dutch Space Office, Netherlands Organization for Scientific Research
2013-2015 **Reviewer**, Swiss National Science Foundation
2013-2014 **Panelist**, National Science Foundation, Geobiology and Low-Temperature Geochemistry Program
2013 **Reviewer**, National Aeronautics and Space Administration, Cosmochemistry Program
2013 **Reviewer**, National Science Foundation, Chemical Oceanography Program
2012 **Reviewer**, Helmholtz Association (Germany), Young Investigators Program
2012 **Reviewer**, National Aeronautics and Space Administration, Mars Fundamental Research Program
2012-2014 **Reviewer**, National Science Foundation, Major Research Instrumentation Program
2011, 2015 **Reviewer**, National Science Foundation, Environmental Chemical Sciences Program
2011 **Chair**, Scattering--Chemistry/Biology/Environmental Proposal Review Panel, Advanced Photon Source
2009-2011 **Member**, Scattering--Chemistry/Biology/Environmental Proposal Review Panel, Advanced Photon Source
2009 **Reviewer**, Department of Energy, Office of Science, Office of Basic Energy Sciences, Geoscience Research Program
2008 **Reviewer**, Center for Materials Innovations, Washington University
2003 **Reviewer**, U.S. Civilian Research and Development Foundation

Professional Activities

- 2015-2018 **Elected Member**, User Executive Committee, Environmental Molecular Sciences Laboratory, Pacific Northwest National Laboratory.
2016-2017 **Session Organizer**, 2017 International Conference on the Biogeochemistry of Trace Elements, Zurich, Switzerland
2014-Present **Associate Editor**, *Geochimica et Cosmochimica Acta*
2014-2015 **Session Organizer and Theme Team Member**, 25th Goldschmidt Conference, Prague, Czech Republic
2014 **Participant**, Advanced Light Source Workshop *Soft X-ray Science Opportunities using Diffraction-Limited Storage Rings*, October 2014
2012-2013 **Session Organizer and Theme Team Member**, 23rd Goldschmidt Conference, Florence, Italy
2011 **Session Organizer**, American Geophysical Union Fall Meeting 2011, San Francisco, CA
2010-2011 **Session Organizer and Theme Team Member**, 2011 Goldschmidt Conference, Prague, Czech Republic
2003 **Session Co-Chair**, Synchrotron-Based Analytical Techniques for Nuclear and Environmental Sciences, 225th National Meeting of the American Chemical Society

ACADEMIC SERVICE

Washington University

Service in the Department of Earth and Planetary Sciences

2008-Present Director of Graduate Studies
2013-Present Chair, Graduate Studies Committee
2012-Present Junior Faculty Mentor
2016-Present Paleoclimatology Faculty Search Committee
2014-2015 High Temperature Geochemistry/Cosmochemistry Faculty Search Committee
2011-2014 Fossett Postdoctoral Fellowship Committee
2012-2013 Strategic Planning Committee
2012-2013 I-CARES/EPS Climate Change Faculty Search Committee
2009-2013 Curriculum Development Committee (Acting Chair Fall 2011)
2012 Graduate Admissions Committee
2008-2012 Chair, Geochemical Instrumentation Committee
2010-2011 Co-Chair, Global Change Biogeochemistry Faculty Search Committee
2008-2009 Graduate Admissions Committee
2007-2008 Graduate Advisor in Training

University Service

2015-2018 Elected Member, Faculty Senate Council
2015-2016 Sexual Misconduct Review Team, Advisory Committee to Provost
2015-2016 Member, Faculty Search Committee in the Department of Energy, Environmental, and Chemical Engineering
2014-Present Environmental Studies Program Steering Committee
2014-Present Participant, Faculty Leadership Development Program
2010-Present Graduate Council
2013-2014 Search Committee for Director of Tyson Research Center
2012-2014 Core Faculty Member, Institute for Materials Science and Engineering
2010-2014 Graduate Teaching and Professional Development Committee
2011-2013 Co-Leader, Washington University team, Center for the Integration of Research, Teaching, and Learning (CIRTL)
2008-2009 Compton Scholars Interview Committee

Stanford University

2004 School of Earth Sciences Academic Programs Committee
2003-2004 University Committee on Graduate Studies
2003-2004 Graduate Student Academic Life Survey Development Committee
2002-2003 Administrative Panel on Radiological Safety
2002-2003 University Committee on Health and Safety
2002-2003 Stanford Student Enterprises Board of Directors
2002-2003 Graduate Student Council, Elected Member and Financial Officer
2001-2002 School of Earth Sciences Graduate Student Advisory Committee