

## DANIEL G. STRAWN

Professor of Soil Chemistry • University of Idaho • Moscow, Idaho

dgstrawn@uidaho.edu

208-885-2713

<http://soilchemistry.weebly.com/>

### DEGREES

Ph.D., 1999, Plant and Soil Sciences. University of Delaware. Dissertation Topic: *Kinetics and Mechanisms of Pb Sorption and Desorption on Soils and Soil Materials*. Advisor: D.L. Sparks.

B.S., 1994, Soil and Water Science. University of California, Davis.

### PROFESSIONAL APPOINTMENTS

2011-present. Professor of Soil Chemistry, University of Idaho, Department of Plant Soil and Entomological Sciences, Division of Soil Science.

2005-2011. Associate Professor of Soil Chemistry, University of Idaho, Department of Plant Soil and Entomological Sciences, Division of Soil Science.

2007- 2008 (6 months). Visiting scientists/sabbatical appointment, Molecular Structures Division, Institute of Radiochemistry, FZD, Germany.

2000-2005. Assistant Professor of Soil Chemistry, University of Idaho, Department of Plant Soil and Entomological Sciences, Division of Soil Science.

1998-99. Postdoctoral Researcher, University of California, Berkeley, Division of Ecosystem Sciences, Berkeley, California.

1994-98. University Graduate Research Fellow, University of Delaware, Department of Plant and Soil Sciences, Newark, Delaware.

1993-94. Scientific Aid/Intern, California Department of Water Resources, Sacramento, California.

### JOURNAL PUBLICATIONS

1. Ott, M.R., D.S. Page-Dumroese, D.G. **Strawn**, J.M. Tirocke. 2017. Using organic amendments to restore soil physical and chemical properties of a mine site in northeastern Oregon, USA. *Transactions of the ASABE*.
2. Weyers, E., D.G. **Strawn**, D. Peak, A. Moore, L. Baker, B. Cade Menun. 2016. Speciation of phosphorus in manure-amended calcareous soils. *Soil Science Society of America Journal* 80:1531–1542.
3. Ippolito, J. C.M. Berry, D.G. **Strawn**, J.M. Novak, J. Levine, A. Harley. 2017. Heavy Metal Sorption Mechanisms in Biochar Amended Mine Tailings. *Journal of Environmental Quality* 46:411–419.
4. McDaniel, P, D.G. Strawn. 2016. Anaerobic Processes. *Encyclopedia of Soil Science*. R. Lal Editor. CRC Press.
5. Liang X., D.G. **Strawn**, J. Chen, J. Marshal. 2016. Cadmium Accumulation in Spring Wheat Grains as Influenced by Variety and Root Length. *Plant and Soil*. 421:219–231.
6. Johnson-Maynard, J., D.G. **Strawn**. 2016. Linking Physical and Biogeochemical Properties and Processes in the Drilosphere. *Soil Science* 181(3/4): 126–132.
7. **Strawn**, D. G., A. Rigby, L. Baker, M. Coleman, I. Koch. 2015. Biochar Soil Amendment Effects on Arsenic Availability to Mountain Brome (*Bromus marginatus*). *Journal of Environmental Quality*

- 44(4): 1315-1320.
8. Osborne, L.R., L.L. Baker, D.G. **Strawn**. 2015. Lead Immobilization and Phosphorus Availability in Phosphate-Amended, Mine-Contaminated Soils. *Journal of Environmental Quality* 44:183-190.
  9. Baker L.L., D.G. **Strawn** 2014. Temperature effects on synthetic nontronite crystallinity and implications for nontronite formation in Columbia River Basalts. *Clays and Clay Minerals*, 62:2, 89-101.
  10. Baker L.L., R.D. Nickerson, D.G. **Strawn** 2014. XAFS study of iron-substituted allophane and imogolite. *Clays and Clay Minerals*, 62: 1, 20-34.
  11. Ippolito, J.A., D.G. **Strawn**, and K.G. Scheckel. 2013. Investigation of Copper Sorption by Sugar Beet Processing Lime Waste. *Journal of Environ Quality*, 42:919-924.
  12. **Strawn**, D.G., P.J. Hickey, P.A. McDaniel, and L.L. Baker. 2012. Distribution of As, Cd, Pb, and Zn in redox features of mine-waste impacted wetland soils. *Journal of Soils and Sediments* 12:1100-1110.
  13. Baker, L., D.G. **Strawn**. 2012. Fe K-edge XAFS spectra of phyllosilicates of varying crystallinity. *Physics and Chemistry of Minerals* 39:675-684.
  14. Baker, L.L., W.R. Rember, K.F. Sprenke, and D.G. **Strawn**. 2012. Celadonite in continental flood basalts of the Columbia River group. *American Mineralogist* 97, pages 1284–1290.
  15. Ippolito, J. A., D.G. **Strawn**, K. G. Scheckel, J. M. Novak, M. Ahmedna, M. A. S. Niandou. 2012. Macroscopic and Molecular Investigations of Copper Sorption by a Steam-Activated Biochar. *Journal of Environmental Quality* 41:1150-1156.
  16. Oram L., D.G. **Strawn**, G. Möller. 2011. Chemical Speciation and Bioavailability of Selenium in the Rhizosphere of *Symphyotrichum eatonii* from Reclaimed Mine Soils. *Environmental Science & Technology*. 45:870-875.
  17. Baker, L., D.G. **Strawn**, W. Rembre, K. Sprenke. 2011. Metal content of charcoal in mining-impacted wetland sediments. *Science of the Total Environment*. 409: 588-594.
  18. Baker, L. D.G. **Strawn**, P. McDaniel, K. Vaughn. 2010 . XAS study of Fe mineralogy in a chronosequence of soil clays formed on basaltic cinders. *Clays and Clay Minerals*. 6:772-782.
  19. Oram L., D.G. **Strawn**, M. Morra, G. Möller. 2010. Selenium Biogeochemical Cycling and Fluxes in the Hyporheic Zone of a Mining-Impacted Stream. *Environmental Science & Technology*. 44: 4176–4183.
  20. Baker, L., D.G. **Strawn**. R. Smith. 2010. Cation Exchange on Vadose Zone Research Park Subsurface Sediment, Idaho National Laboratory. *Vadose Zone Journal*. 9: 476-485.
  21. **Strawn**, D.G., L. Baker. 2009. Molecular Characterization of Copper in Soils Using X-ray Absorption Spectroscopy. *Environmental Pollution*. 157 2813-2821.
  22. **Strawn**, D.G. L. Baker. 2008. Speciation of Cu in a contaminated agricultural soil measured by XAFS,  $\mu$ -XAFS and  $\mu$ -XRF. *Environmental Science and Technology* 42:37-42.
  23. McGregor, A.L., J.L. Johnson-Maynard, D.G. **Strawn**, B. Shafii, G. Möller. 2008. Plant Uptake and Leaching Of Selenium In Manure- and Gypsum-Amended Soils of the Western Phosphate Resource Area. *Soil Science* 173:613-623.
  24. Toevs, G., M.J. Morra, L. Winowiecki, D.G. **Strawn**, M.L. Polizzotto, S. Fendorf. 2008. Depositional Influences on Porewater Arsenic in Sediments of a Mining-Contaminated Freshwater Lake. *Environmental Science & Technology* 42:6823-6829.
  25. Hickey, P.J., P.A. McDaniel, D.G. **Strawn**. 2008. Characterization of iron- and manganese-cemented redoximorphic aggregates in wetland soils contaminated with mine wastes. *Journal of Environmental Quality*, 37, 2375-2385.
  26. Oram, L., D.G. **Strawn**, M.A. Marcus, S. Fakra, G. Moller. 2008. Macro- and micro-scale investigation of selenium speciation in Blackfoot River, Idaho, USA sediments. *Environmental*

- Science and Technology*, 42, 6830-6836.
27. R. L. Newcombe, D.G. **Strawn**, T. M. Grant, S. E. Childers, G. Möller. Phosphorus Removal from Municipal Wastewater by Hydrous Ferric Oxide Reactive Filtration and Coupled Chemically Enhanced Secondary Treatment: Part II—Mechanism. *Water Environment Research. Water Environment Research* 80(3): 248-256.
  28. Furman O., D.G. **Strawn**, S. McGeehan. 2007. Sample Drying Effects on Lead Bioaccessibility in Reduced Soil. *Journal of Environmental Quality* 36:899-903.
  29. **Strawn**, D.G., P. Hickey, A. Knudsen, L. Baker. 2007. Geochemistry of Lead Contaminated Wetland Soils Amended with Phosphorus. *Environmental Geology* 52, 109-122.
  30. Toevs, G.R., Morra, M.J., Polizzotto, M.L., Bostick, B.C., Fendorf, S.E., **Strawn, D.G.**, 2006. Metal(loid) Diagenesis in Mine-impacted Sediment of Lake Coeur d'Alene, Idaho. *Environmental Science and Technology*, 40, 2537-2543.
  31. Ryser, A. L., D.G. **Strawn**, M. A. Marcus, S. Fakara, J. L. Johnson-Maynard, G. Moller. 2006. Microscopically Focused Synchrotron X-ray Investigation of Se Speciation in Soils Developing on Reclaimed Mine Lands. *Environmental Science and Technology*, 40: 462-467.
  32. Furman O., D.G. **Strawn**, G. H. Heinz, B. Williams. 2006. Risk Assessment Test for Lead Bioaccessibility to Waterfowl in Mine-Impacted Soils in the Coeur d'Alene River Basin, Idaho. *Journal of Environmental Quality*, 35:450-458.
  33. Furnare L., A. Vailionis, D.G. **Strawn**. 2005. Polarized-XANES and EXAFS Spectroscopic Investigation into Copper Complexes on Vermiculite. *Geochimica et Cosmochimica Acta*, 69: 5219-5231.
  34. Furnare L., A. Vailionis, and D.G. **Strawn**. 2005. Molecular-level Investigation into Copper Sorption Mechanisms on Reduced Vermiculite. *Journal of Colloid and Interface Science*, 289: 1-13.
  35. Kimsey M. Jr., P. McDaniel, D.G. **Strawn**, J. Moore. 2005. Fate of Applied Sulfate in Volcanic Ash-Influenced Forest Soils. *Soil Science Society of America Journal*, 69: 1507-1515.
  36. Ryser A., D.G. **Strawn**, M.A. Marcus, J.L. Johnson-Maynard, M.E. Gunter, G. Möller. 2005. Micro-Spectroscopic Investigation of Selenium-Bearing Minerals from the Western US Phosphate Resource Area. *Geochemical Transactions*, 6:1-11.
  37. Hansen, J., B. Cade-Menun, D.G. **Strawn**. 2004. Phosphorous Speciation in Manure-Amended Alkaline Soils. *Journal of Environmental Quality*, 33: 1521-1527.
  38. **Strawn**, D.G., N.E. Palmer, L.J. Furnare, C. Goodell, J.E. Amonette, R.K. Kukkadapu. 2004. XAFS Investigation into the Sorption Mechanisms of Copper on Montmorillonite. *Clays and Clay Minerals*, 52:321-333.
  39. Hansen, J., D.G. **Strawn**. 2003. Kinetics and Mechanisms of Phosphorous Release from Manure-Amended Alkaline Soils. *Soil Science*, 168:869-879.
  40. **Strawn** D.G., H.E. Doner, M. Zavarin, S.A. McHugo. 2002. Microscale Investigation into the Geochemistry of Arsenic, Selenium and Iron in Soil Developed in Pyritic Shale Materials. *Geoderma*, 108:237-257.
  41. O'Reilly S.E., D.G. **Strawn**, D.L. Sparks 2000. Residence Time Effects on Arsenate Adsorption/desorption Mechanisms on Goethite. *Soil Science Society of America Journal*, 65:67-77.
  42. **Strawn**, D.G., D.L. Sparks. 2000. Effects of Soil Organic Matter on the Kinetics and Mechanisms of Pb(II) Sorption and Desorption in Soil. *Soil Science Society of America Journal*, 64:144-156.
  43. **Strawn**, D.G., D.L. Sparks. 1999. The Use of XAFS to Distinguish Between Inner- and Outer-Sphere Lead Adsorption Complexes on Montmorillonite. *Journal of Colloid and Interface Science*, Vol. 216, pp 257-269.
  44. **Strawn**, D.G., A.M. Scheidegger, and D.L. Sparks. 1998. Kinetics and Mechanisms of Pb(II) Sorption

and Desorption at the Aluminum Oxide-Water Interface. *Environmental Science and Technology*, 32: 2596-2600.

45. Scheidegger A.M., D.G. **Strawn**, G.M. Lamble, and D.L. Sparks. 1998. The Kinetics of Mixed Ni-Al Hydroxide Formation on Clays and Al Oxides: A Time-resolved XAFS Study. *Geochimica et Cosmochimica Acta*, 62:2233-2245.

#### CHAPTERS AND TEXTBOOK

1. McDaniel, P.M. D.G. **Strawn**. 2016. Anaerobic Processes. Encyclopedia of Soil Science.
2. **Strawn**, D.G., H. Bohn. G. O'Connor. 2015. *Soil Chemistry*. John Wiley and Sons, West Sussex, UK. 375 pages.
3. Sparks D.L., A.M. Scheidegger, D.G. **Strawn**, and K.G. Scheckel. 1999. *Kinetics and Mechanisms of Metal Sorption at the Mineral/Water Interface*. In "Kinetics and Mechanisms of Reactions at the Mineral/Water Interface," D.L. Sparks, and T.J. Grundl (eds.), American Chemical Society Symposium Series 715, pp. 108-135.
4. **Strawn**, D.G., and D.L. Sparks. 1999. *Sorption Kinetics of Trace Elements in Soils and Soil Materials*. In "The Fate and Transport of Trace Metals in the Vadose Zone," H.M. Selim and I.K. Iskandar (eds.), Lewis Publishers, Boca Raton, Florida.

#### OTHER PUBLICATIONS

1. **Strawn**, D.G. et al. 2015. Promoting Advanced Analytical Tools in Soil Science for Food Security. American Society of Agronomy and Soil Science Society of America <https://www.crops.org/science-policy/white-papers/browse/>
2. **Strawn**, D.G., A. Ryser, J. Johnson Maynard, G. Moller, B. Hart, M. Marcus. Biogeochemistry of Selenium on Remediated Phosphate-Mine Tailings in Southeastern Idaho. Paper was presented at the 2004 National Meeting of the American Society of Mining and Reclamation and The 25<sup>th</sup> West Virginia Surface Mine Drainage Task Force, April 18-24, 2004. Published by ASMR, 3134 Montavesta Rd., Lexington, KY 40502.
3. **Strawn**, D.G., and H.E. Doner. 2001. "Element Associations and Spatial Distribution as Components of Soil Quality." In Soil Quality in the California Environment: Annual Report of Research Projects, 1999-2000 A. Zabel and G. Sposito (eds), M. Theo Kearney Foundation of Soil Science.

#### PATENTS

1. Greg Möller, **D.G. Strawn**, M. Baker, G. Staggs. 2015. New Patent Application: Functionalized Biochar Water Treatment. (40 pages). Evaluated to have 81 claims; Patent Pending.

#### INVITED PRESENTATIONS (LAST FIVE AS PRESENTER, 32 CAREER TOTAL)

1. **Strawn**, D.G., J. Chen, P. McDaniel, J. Marshal. 2014. Field-based study of factors affecting cadmium uptake by wheat from Idaho soils. Idaho Wheat Commission Annual Meeting, Boise, Idaho.
2. **Strawn** D.G., Baker L., P. McDaniel. 2011. Speciation of iron in nano-crystalline aluminosilicates. Symposium--Minerals, Nanoparticles, and Health: I. October 18, 2011. SSSA Annual Meetings. San Antonio Texas. Invited by Youjun Deng (Texas AM).
3. **Strawn**, D.G. 2008. Molecular Characterization of Selenium in the Environment. University of

- Montana Geology Seminar. September 2008. Missoula MT. Invited by Nancy Hinman.
4. **Strawn**, D.G. July 2007. Use of Synchrotron Radiation to Investigate Chemical and Mineral Speciation in Soils. European Synchrotron Radiation Facility Seminar Series. Invited by Andreas Scheinost.
  5. **Strawn**, D.G., L. Oram, G. Möller. August 2007. Molecular Characterization of Selenium in the Environment. Keynote address in symposium entitled, "Speciation and Reactivity of Trace Elements in Natural Environments." 2007 Goldschmidt Conference. Invited by Andreas Voegelin.

#### PRESENTATIONS (LAST FIVE AS PRESENTER, 68 CAREER TOTAL)

1. Norby, J., E. Brooks, **D.G. Strawn**. 2017. Subsurface phosphorus transport through a no-till field in the semi-arid Palouse region. AGU, New Orleans
2. **Strawn**, D.G. 2015. The essence of soil chemistry class. Annual meeting of the Soil Science Society of America, Minneapolis, MN. Nov. 2015.
3. **Strawn**, D.G., E. Weyers, A. Moore, L. Baker, D. Peak. B. Cade-Menun. 2015. Speciation of phosphorus in manure-amended soil using advanced spectroscopic characterization. Annual meeting of the Soil Science Society of America, Minneapolis, MN. Nov. 2015.
4. **Strawn**, D.G., E. Weyers, A. Moore, L. Baker, D. Peak. B. Cade-Menun. 2015. Speciation of phosphorus in manure-amended soil using advanced spectroscopic characterization. FY 2015 USDA-NIFA NIWQP and AFRI Annual Project Directors' Meeting. Greensboro, NC. July 2015.
5. **Strawn**, D.G., A. Rigby, L. Baker. 2014. Use of Biochar to Remediate Arsenic and Antimony Contaminated Soils. Annual Meeting of the Soil Science Society of America, November 2014, Long Beach, California.
6. **Strawn**, D.G., L. Osborne. Remediation of Pb in mine-contaminated wetland soils using PO4 amendment. Annual meetings of the Soil Science Society of America, Tampa, FL. November 2013.

#### TEACHING

##### Classes Developed and Taught

Env. Sci. 504: Geochemistry- Terrestrial Subsurface Processes

Soil 422: Environmental Soil Chemistry

Soil 522: Advanced Soil Chemistry

Soil 526: Soil Mineralogy

Soil 501: Soil and Water Science Seminar

##### Summary of Teaching

Class, Year, Units (enrolled)	Total Students
Env. Soil Chemistry (Soils 422), 3 units, Years: 2000, 2001, 2004, 2006, 2008, 2009, 2012, 2014, 2016, 2018	128
Soil and Water Science Seminar (Soils 501), 1 unit, Years: 2007, S-2009, F-2009, S-2010, S-2011, S-2012, S-2013, S-2014, S-2015, S-2016	~70
Soil Mineralogy* (Soils 526), 4 units, Years: 2003, 2005, 2008, 2010	21
Geochemistry: Terrestrial and Subsurface Processes* (ENVS 504), 4 units, Years: 2003, 2004, 2005, 2006, S 2008, F 2008	97
Advanced Soil Chemistry (Soils 528), 3 units, 2002, 2004, 2010, 2015(WSU)	~45

## ADVISING

### Graduate students advised (major advisor)

Student Name	Major
Alison Torres	MS Soil & Land Resources
Brueggeman, Leah Marie	MS Soil & Land Resources
Carp, Lizzie	MS Soil & Land Resources
Furman, Olha	MS Environmental Science
Furnare, Luca John	MS Soil & Land Resources
Hansen, Jeremy Curtis	MS Soil & Land Resources
Heron, Tom	MS Soil & Land Resources
Hickey, Patrick	MS Soil & Land Resources
Jess Norby	MS Water Resources
Lizzie Carp	MS Soil & Land Resources
Monica Ott	MS Soil & Land Resources
Oram, Libbie Lisa	MS and PHD Environmental Science
Osborne, Lydia	MS Soil & Land Resources
Rigby, April	MS Environmental Science
Ryser, Amy Lynn	MS Soil & Land Resources
Smith, Stephanie Anne	PhD Environmental Science
Eva Weyers	MS Environmental Science

## HONORS AND AWARDS

Marion L. and Chystie M. Jackson Award, 2011. Distributed by the Soil Science Society of America for mid-career accomplishments in research and teaching in soil chemistry and mineralogy.

Outstanding Reviewer Recognition Award, 2011. Journal of Environmental Quality.

Harrison Prescott Eddy Medal, 2009. The Water Environment Federation: A technical and educational organization with 36,000 individual members and 75 affiliated Member Associations representing water quality professionals around the world awarded the *Harrison Prescott Eddy Medal* to our research team for a vital contribution to the knowledge and fundamental principles of water treatment.

Outstanding Reviewer Recognition Award, 2004. Journal of Environmental Quality.

Presidential Early Career Award for Scientist and Engineers, 2001. USDA awardee.

## SERVICE

- Manuscript reviewer (12+ manuscripts/yr): Journal of Soil Science, Environmental Science and Technology, Journal of Environmental Quality, Water Resources, Geoderma, Soil and Sediment Contamination: an International Journal, Geochimica et Cosmochimica Acta, Soil Science Society of America Journal, Soil Science, Journal of Colloid and Interface Science.
- Proposal reviewer/panel member: CSREES/USDA, Stanford Synchrotron Radiation Source Laboratory, NSF, and DOE. Swiss Federal Research Agency, Kearney Research Foundation, Netherlands National Council for the Earth and Life Sciences, Canadian Space Agency, Agriculture and Agri-food Canada.

- Associate Editor: Soil Science Society of America Division S-9: Soil Mineralogy. 2005-2012
- Division Chairman, Soil Science Society of America Division S-2, 2015.
- Member NCR 174: Synchrotron X-ray Sources in Soil Science Research. 2000-current
- Secretary and Chair of NC1022 Multi-state group 2008-current entitled, "The Chemical and Physical Nature of Particulate Matter Affecting Air, Water and Soil Quality"
- Member A236.1, Membership Services and Retention Committee of the American Society of Agronomy.
- Chair of Marion L. and Chrystie Jackson Soil Science Award for SSSA. Organized committee selection process and presented award at annual meetings. 2005
- Participant in the McCall Outdoor Science School, Water Resources in a Changing Climate high school student and teacher workshop (2010)
- Member of the Peer Review Committee at the Canadian Light Source 2011-2012

#### GRANTS AND CONTRACTS (TOTAL = \$3.27M; SPENDING AUTHORITY ~\$1.7M)

1. **Strawn, D.G.**, Chen, Liang, et al..2017. Field-based study of factors affecting cadmium uptake by wheat from Idaho soils. Idaho Wheat Commission. \$55,132 (spending authority \$21,444)
2. **Strawn, D.G.**, Baker, Moller. 2017. Investigation of phosphorus adsorption on Idaho SRP volcanic materials for use in storm water filter beds. Ada County Highway District. \$27,173.
3. Brooks, E., J. Johnson-Maynard, **D.G. Strawn**. Effects of long term no-tillage management on soil structure and soil phosphorus distribution. USDA-ARS. \$85,000 (spending authority 1/3).
4. Brooks, E., D.G. **Strawn**, J. Johnson-Maynard. 2016. Effects of long term no-tillage management on soil structure and soil phosphorus distribution. USDA-ARS. \$85,000.
5. Dobre, M., E. Brooks, D.G. **Strawn** et al. 2016. Phosphorus Management in Forested Ecosystems. USDA-AFRI. \$402,536.
6. **Strawn**, D.G., Chen, Liang. 2016. Field-based study of factors affecting cadmium uptake by wheat from Idaho soils. Ardent Mills Inc., Nestle Inc. \$30,000.
7. **Strawn**, D.G., J. Chen, P. McDaniel, J. Marshal. 2016. Field-based study of factors affecting cadmium uptake by wheat from Idaho soils. Idaho Wheat Commission; \$61,445.
8. **Strawn**, D.G., Möller, R. Tripepi. 2015. N-E-W Terra™: An Enhanced Efficiency Fertilizer (EEF) Manufactured from Biochar. Idaho State Department of Commerce Higher Ed Research Council. \$61,000.
9. Möller, G., D.G. **Strawn**. 2015. N-E-W Tech™: Innovation at the Nutrient, Energy, Water Nexus. Idaho State Department of Commerce Higher Ed Research Council. \$427,000.
10. **Strawn**, D.G., Chen, Liang. 2015. Field-based study of factors affecting cadmium uptake by wheat from Idaho soils. Ardent Mills Inc., Nestle Inc. \$30,000.
11. **Strawn**, D.G., and Brooks. 2015. Linking agronomic soil-P with water quality in Palouse cropping systems. USGS. \$30,000.
12. **Strawn**, D.G., J. Chen, P. McDaniel, J. Marshal. 2015. Field-based study of factors affecting cadmium uptake by wheat from Idaho soils. Idaho Wheat Commission; \$32,698.
13. Williams, R., et al. 2014. Acquisition of a 500 MHz Nuclear Magnetic Resonance Spectrometer. Murdoch Foundation. Total with match = \$750,000. *\*Not included in total funding sum.*
14. **Strawn**, D.G., J. Chen, P. McDaniel, J. Marshal. 2014. Field-based study of factors affecting cadmium uptake by wheat from Idaho soils. Idaho Wheat Commission; \$37,500.
15. **Strawn**, D.G., A. Moore, D. Peak. 2013. Seed grant to determine molecular speciation of phosphorus in soils from a long-term dairy manure amendment trial in Idaho. Funded for

- two years at \$149,000 by USDA AFRI program.
16. **Strawn, D.G.**, 2012. Evaluation of potential of wood ash from the IFG slash-power plant to be applied as a beneficial soil amendment. Idaho Forest Group, Inc. \$2,987
  17. **Strawn, D.G.**, L. Baker, P. McDaniel. 2010. Characterization of Fe-substituted nanominerals on Earth and Mars. Initiation Grant. \$49,713. NASA, Idaho Space Grant Consortium.
  18. **Strawn, D.G.**, L. Baker. 2008. Experimental Plan to Measure Cation Exchange of Vadose Zone Research Park (VZRP) Subsurface Samples. Subcontract with Bob Smith on a DOE project. \$41,795.
  19. L. Oram, D.G. **Strawn**. 2008. University Presidential Graduate Fellowship. \$25,000.
  20. Scheinost, A., D.G. **Strawn**. 2007. Visiting Faculty at the German Rossendorf Beamline in Grenoble France. Research Center Rossendorf (FZR). \$20,686.
  21. **Strawn, D.G.**, G. Moller, M. Morra. 2007. Selenium Biogeochemistry in the Hyporheic Zone of Streams within the Blackfoot River Watershed. USGS \$20,000.
  22. **Strawn, D.G.** 2006. Graduate Fellowship for Libbie Oram in the Subsurface Science Program under the Inland Northwest Research Alliance. \$60,000.
  23. **Strawn, D.G.** 2006. INRA Subsurface Science Graduate Program-Block 3-Subsurface Chemical Processes. DOE, \$13,672.
  24. **Strawn, D.G.** 2005. INRA Subsurface Science Graduate Program-Block 3-Subsurface Chemical Processes. DOE, \$14,636.
  25. **Strawn, D.G.** 2004. INRA Subsurface Science Graduate Program-Block 2-Subsurface Chemical Processes. DOE, \$15,483.
  26. **Strawn, D.G.** 2004. Molecular Level Characterization of Metal Sorption on Soil Clay Minerals in the Presence of Inorganic and Organic Ligands. USDA/NRI/PECASE, \$129,731.
  27. M. Morra, D.G. **Strawn** 2003. Validating Metal(loid) Flux Predictions from Lake Coeur d'Alene Sediments Using Contaminated Ponds as Mesocosms. USGS, \$30,000.
  28. **Strawn, D.G.**, R. Smith. 2003. INRA Subsurface Science Graduate Program-Block 2-Subsurface Chemical Processes. DOE, \$14,000.
  29. **Strawn, D.G.**, R. Smith, E. Anderson, and G. Redden. 2002. INRA Subsurface Science Graduate Program-Block 5-Subsurface Chemical Processes. DOE, \$26,091.
  30. **Strawn, D.G.** 2001. Factors Controlling the Availability of Phosphorus Transport into Surface Waters from Manure Amended Soils in Southern Idaho. USGS/IWRRRI, \$27,871.
  31. **Strawn, D.G.** 2001. Organic Phosphorus Reaction Mechanisms at the Soil Mineral Interface." University of Idaho Seed Grant, \$8,891.
  32. **Strawn, D.G.** 2002. Molecular Structure of Inner-sphere and Aqueous Multinuclear Pb(II) and Cu(II) Complexes on Clay Minerals. USDA/NRI, \$176,000.
  33. **Strawn, D.G.**, D. Audet, J. Campbell, J. Cornish, A. Dailey, S. McGeehan, J. Munkers, B. Williams, and N. Zilka. 2002. Speciation of Lead and Zinc in Phosphate Amended Soils in the Coeur d'Alene River Basin. EPA, \$116,987.
  34. G. Moller, D. Crawford, D.G. **Strawn**, J. Johnson-Maynard. 2002. Biogeochemical Cycling of Selenium in the Western Phosphate Resource Area: Sources, Pathways, Receptors and Controls. EPA, \$900,000.
  35. **Strawn, D.G.** 2002. Determination of Agricultural Lime Requirements for P-amended Plots. IDEQ, \$2,985.
  36. **Strawn, D.G.**, B. Williams, and S. McGeehan. 2001. Speciation of Lead and Zinc in Phosphate Amended Soils in the Coeur d'Alene River Basin. Idaho Department of Environmental Quality, \$38,004.
  37. **Strawn, D.G.** 2001. Request for Funds to Travel to Stanford Synchrotron Radiation Laboratory

to Collect Data for Project Development. University of Idaho, Travel Grant Program, \$900.