

Justin Thomas Jasper

Postdoctoral Researcher

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EDUCATION

- 9/2014 **Doctor of Philosophy**
Civil & Environmental Engineering, University of California (Berkeley, CA)
Dissertation: *Treatment of Trace Organic Contaminants and Nutrients in Open-Water Unit Process Wetlands*; Advisor: Dr. David Sedlak
- 5/2009 **Master of Science**
Civil & Environmental Engineering, University of California (Berkeley, CA)
- 5/2005 **Bachelor of Arts**
Chemistry, Reed College (Portland, OR)
Thesis: *Investigating the doublet at 1300 wavenumbers: A resonance Raman whodunit*; Advisor: Dr. Daniel Gerrity

APPOINTMENTS

- 10/2014-Current **Resnick Sustainability Institute Prize Postdoctoral Scholar**
Hoffmann Group, Dept. of Environ. Sci. & Eng., California Institute of Technology (Pasadena, CA)
- 8/2008-9/2014 **Graduate Student Researcher**
Sedlak Group, Water Center, Dept. of Civil & Environ. Eng., University of California (Berkeley, CA)
- 8/2012-12/2012 **Graduate Student Instructor**
Water Chemistry, Dept. of Civil & Environ. Eng., University of California (Berkeley, CA)
- 7/2011-8/2011 **Visiting Researcher**
Division of Land & Water, Commonwealth Scientific & Industrial Research Organisation (CSIRO) (Adelaide, Australia)
- 12/2005-11/2007 **Education Volunteer**
Kafakule Secondary School (Malawi, Africa); Peace Corps
- 9/2003-5/2005 **Science & Math Peer Tutor**
Reed College (Portland, OR)
- 9/2004-12/2004 **Laboratory Instructor**
Chemistry Department, Reed College (Portland, OR)
- 6/2004-8/2004 **NSF REU Intern**
Thayer School of Eng., Dartmouth College (Hanover, NH)
- 6/2003-8/2003 **NSF REU Intern**
Department of Chemistry, Montana State (Bozeman, MT)

RESEARCH INTERESTS

Fate and transport of chemicals in natural and constructed systems. Specific research focuses include phototransformation of trace organic chemicals in natural and engineered systems; biotransformation of trace organic chemicals during wastewater treatment and in the environment; fate of nutrients in natural and engineered treatment systems; treatment wetland engineering; photo-inactivation of pathogens; electro-chemical transformation of trace organic contaminants; fate of nutrients during electrochemical treatment; engineered solutions to sustainable water and sanitation in the developing world.

FELLOWSHIPS

2015-Current Resnick Postdoctoral Fellowship in Sustainability Science
2014 UC Berkeley Bay Area Water Quality Fellowship
2009-2012 NSF Graduate Research Fellowship
2008-2009 UC Berkeley Civil & Environmental Engineering Department Fellowship
2004 NSF Research Experiences for Undergraduates (REU)
2003 NSF Research Experiences for Undergraduates (REU)

AWARDS & HONORS

2015 Dow Sustainability Innovation Student Challenge Award
2015 Paul V. Roberts/AEESP Outstanding Doctoral Dissertation Award
2013 Geosyntec Student Paper Competition Winner
2011 ACS Student Exchange Award
2009 Cal NERDS Outstanding Graduate Student Mentor Award
2005 Phi Beta Kappa
2002-2005 Reed College Commendation of Academic Excellence

PROFESSIONAL ACTIVITIES & OUTREACH

- **Supervisor:** NSF RET (Summers 2013, 2014); Cal NERDS (Summers 2009, 2010); Caltech SURF (Summer 2016)
- **Guest Lecturer:** Physical Inorganic Chemistry of Natural Waters (Caltech, Spring 2015); Environmental Organic Chemistry (Caltech, Spring 2016)
- **Reviewer:** *Environ. Sci. & Technol.*, *Water Res.*, *Environ. Chem.*, *Env. Eng. Sci.*, *Chemosphere*, *Environ. Poll.*, *Ecol. Eng.*
- **Member:** American Chemical Society
- **Organizer:** UC Berkeley Environmental Engineering Weekly Seminar Series (2011)
- **Volunteer:** Oakland International High School math and science tutor (2008-2013)

PEER-REVIEWED PUBLICATIONS

(12) Jasper, JT; Shafaat, OS; Hoffmann, MR. Electrochemical transformation of trace organic contaminants in latrine wastewater. *Environ. Sci. Technol.* **2016**, *50*, 10198-10208.

(11) Yang, Y; Shin, J; Jasper, JT; Hoffmann, MR. Multi-layer hetero-junction anode for saline wastewater treatment: Design strategies and reactive species generation mechanisms. *Environ. Sci. Technol.* **2016**, *50*, 8780-8787.

(10) Svan, A; Hedeland, M; Arvidsson, T; Jasper, JT; Sedlak, DL; Pettersson, CE. Identification of transformation products from β -blocking agents formed in wetland microcosms using LC-Q-ToF. *J. Mass. Spec.* **2016**, *51*, 207-218.

(9) Prasse, C; Wenk, J; Jasper, JT; Ternes, T; Sedlak, DL. Co-occurrence of photochemical and microbiological transformation processes in open-water unit process wetlands. *Env. Sci. Technol.* **2015**, *49*, 14136-14145.

(8) Svan, A; Hedeland, M; Arvidsson, T; Jasper, JT; Sedlak, DL; Pettersson, CE. Rapid chiral separation of atenolol, metoprolol, propranolol and the zwitterionic metoprolol acid using supercritical fluid chromatography-tandem mass spectrometry – Application to wetland microcosms. *J. Chromatogr. A.* **2015**, *1409*, 251-258.

(7) Nguyen, MT; Jasper, JT; Boehm, AB; Nelson, KL. Sunlight inactivation of fecal indicator bacteria in open-water unit process treatment wetlands: Modeling endogenous and exogenous inactivation rates. *Water Res.* **2015**, *83*, 282-292.

(6) Barazesh, J; Hennebel, T; Jasper, JT; Sedlak, DL. Modular advanced oxidation process enabled by cathodic hydrogen peroxide production. *Environ. Sci. Technol.* **2015**, *49* (12), 7391-7399.

(5) Jasper, JT; Jones, ZL; Sharp, JO; Sedlak, DL. Nitrate removal in shallow, open-water treatment wetlands. *Environ. Sci. Technol.* **2014**, *48* (19), 11512-11520.

(4) Jasper, JT; Jones, ZL; Sharp, JO; Sedlak, DL. Biotransformation of wastewater-derived trace organic contaminants in open-water unit process treatment wetlands. *Environ. Sci. Technol.* **2014**, *48* (9), 5136–5144.

(3) Jasper, JT; Sedlak, DL. Phototransformation of wastewater-derived trace organic contaminants in open-water unit process treatment wetlands. *Environ. Sci. Technol.* **2013**, *47* (19), 10781–10790.

(2) Jasper, JT; Nguyen, MT; Jones, ZL; Ismail, NS; Sedlak, DL; Sharp, JO; Luthy, RG; Horne, AJ; Nelson, KL. Unit process wetlands for removal of trace organic contaminants and pathogens from municipal wastewater effluents. *Environ. Eng. Sci.* **2013**, *30* (8), 421–436.

(1) Ezra, D; Jasper, J; Rogers, T; Knighton, B; Grimsrud, E; Strobel, G. Proton transfer reaction-mass spectrometry as a technique to measure volatile emissions of *Muscodor albus*. *Plant Sci.* **2004**, *166* (6), 1471–1477.

PUBLICATIONS IN PREPARATION

(1) Jasper, JT; Hoffmann, MR. Toxic byproduct formation during electrochemical treatment of latrine wastewater. *In preparation for Environ. Sci. Technol*

(2) Cid, CA; Jasper, JT; Hoffmann, MR. Phosphate removal from wastewater by electrochemical precipitation as hydroxyapatite. *In preparation for Water Res.* (first two authors made equal contributions)

(3) Finke, CE; Omelchenko, ST; Kasamaee, LM; Jasper, JT; Lewis, NS; Hoffmann, MR. A proof of Concept for using atomic layer deposition to tune surface electronics and catalytic overpotentials of a heterogeneous electrocatalyst, applied to IrO₂ as a chlorine evolution reaction catalyst. *In preparation for Science.*

(4) Jones, ZL; Jasper, JT; Sedlak, DL; Sharp, JO. Sulfide-induced dissimilatory nitrate reduction to ammonium facilitates anammox in an open water unit process wetland. *In preparation.*

RECENT PRESENTATIONS

- (17) [Jasper, J](#); Hoffmann, M. Fate of Organic Chemicals during Electrochemical Wastewater Treatment: Pharmaceuticals and Disinfection By-Products. Resnick Institute Symposium, Caltech, CA, October 19, 2016. (Invited talk)
- (16) [Jasper, J](#); Hoffmann, M. Electrochemical Transformation of Trace Organic Contaminants in On-Site Sanitation Systems. Gordon Research Conference, Holderness, NH, June 27-29, 2016. (Poster)
- (15) [Jasper, J](#). Wastewater Treatment Reimagined: From Open-Water Wetlands to Onsite Electrolysis. Civil and Architectural Engineering Weekly Seminar, University of Wyoming, April, 2016. (Invited talk)
- (14) [Jasper, J](#); Cid, C; Hoffmann, M. Phosphate removal from wastewater by electrochemical precipitation as hydroxyapatite. Association of Environmental Engineering and Science Professors Conference, Yale University, June 2015. (Poster)
- (13) [Jasper, J](#); Sedlak, D. Removal of Wastewater-Derived Contaminants in Open-Water Wetlands. Environmental Toxicology and Sciences Departmental Seminar, UC Riverside, April 2015. (Invited talk)
- (12) [Jasper, J](#); Jones, Z; Sharp, J; Sedlak, D. Removal of Nitrate in Shallow, Open-Water Treatment Unit Process Wetland Cells. American Chemical Society Fall Meeting, San Francisco, CA August 2014. (Oral presentation)
- (11) Beardsley, S; [Jasper, J](#); Prasse, C; Sedlak, D. Harnessing Vegetated Treatment Wetlands for the Biotransformation of Trace Organic Contaminants. Gordon Research Conference, Holderness, NH, June, 2014. (Poster)
- (10) Beardsley, S; Diaz, C; Harris-Lovett, S; Horne, H; [Jasper, J](#); Jones, Z; Lowe, J; Luthy, R; Nelson, K; Sedlak, D; Sharp, J. The use of constructed wetlands as a means of improving water quality and adapting to the effects of climate change. Philomathia Symposium, Berkeley, CA, November 1, 2013. (Poster)
- (9) Lowe, J; Nilsen, C; [Jasper, J](#); Sedlak, D; Connor, M; Diaz, C; Baye, P; Warner, J; Boehm, A. The Oro Loma ecotone project: Nitrogen removal in a constructed wetland habitat on San Francisco Bay. State of the Estuary, Oakland, CA, October 29-30, 2013. (Poster)
- (8) Jones, ZL; [Jasper, JT](#); Beardsley, S; Horne, A; Sedlak, DL; Sharp, JO. Unit process wetlands for the attenuation of trace organic contaminants. Association of Environmental Engineering and Science Professors Meeting, Golden, CO, July 14-16, 2013.
- (7) [Jasper, JT](#); Sedlak, DL. Biotransformation of trace organic compounds in a periphyton-dominated unit process treatment wetland. Micropollutant and Ecohazard Conference, Zurich, Switzerland, June 16-20, 2013. (Oral presentation)
- (6) [Jasper, JT](#); Beardsley, S; Sedlak, DL. Removal of trace organic contaminants in a periphyton-dominated wetland. Gordon Research Conference, Holderness, NH, June 20-25, 2012. (Oral presentation and poster)
- (5) [Jasper, JT](#); Sedlak, DL. Fate of trace organic contaminants in unit process treatment wetlands. Northern California Society of Environmental Toxicology and Chemistry Conference, Berkeley, CA, May 3, 2012. (Oral presentation)
- (4) [Jasper, JT](#); Sedlak, DL. The role of periphyton in the removal of trace organic compounds in an engineered treatment wetland. Society of Environmental Toxicology and Chemistry Conference, Boston, MA, November 15, 2011. (Oral presentation)
- (3) [Jasper, JT](#); Sedlak, DL. Phototransformation of trace organic compounds in an engineered treatment wetland. Micropollutant and Ecohazard Conference, Sydney, Australia, July 11, 2011. (Oral presentation)
- (2) [Jasper, JT](#); Sedlak, DL. Phototransformation of trace organic compounds in an engineered treatment wetland. American Chemical Society Spring Meeting, Anaheim, CA March 29, 2011. (Oral Presentation; Student Exchange Award)
- (1) [Jasper, JT](#); Sedlak, DL. Maximizing photolysis of pharmaceuticals in engineered treatment wetlands. Gordon Research Conference, Holderness, NH, June 20-25, 2010. (Poster)

REFERENCES

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