

Damon Turney

Sustainable Energy Technologies Department
Brookhaven National Laboratory Bldg. 130
Upton, NY 11973 USA

email: dturney@bnl.gov
Phone: (1) 805-571-3764
Fax: (1) 805-823-4593

Education

B.A. in Physics (cum laude)

The Colorado College, May 2000

M.S. in Mechanical Engineering

University of California, Santa Barbara, June 2006

Certificate in Technology Management Practices

University of California, Santa Barbara, January 2008

This is a one-year program in technology management practices. It has now become an M.S. program.

Ph.D. in Environmental Science & Management

University of California, Santa Barbara, April 2009

Advisor: Dr. Sanjoy Banerjee; Dissertation Title: Improved Understanding of Air-Water Transfer of Volatile Chemicals

Expertise

- Chemical, environmental, and mechanical engineering for manufacturing and recycling: new chemical technologies, laboratory experiments, scale-up issues, cost reduction, components redesign, and supply chain integration.
- Fate and transport of chemicals: kinetics, interphase transport, analytical methods, computation, theory.
- Scientific research and development: funding, concept generation, facility construction, safety, budgeting.
- Life cycle assessment of energy systems: energy payback times, carbon emissions, environmental impacts.

Honors and Awards

- Featured on the Cover of American Institute of Chemical Engineering Journal, February 2008
- Dissertation Fellowship Award, UCSB Graduate Division, 2005
- Micro Fellowship, UCSB Materials Engineering, 2001
- Kathryn Morhman Presidential Scholarship, The Colorado College, 1999-2000
- Princeton Plasma Physics Fellow, 1999
- College Record Pole Vault, Track & Field Team, The Colorado College, 1999
- Award (top 15%) American Mathematical Modeling Contest, 1998

Technical Experience

- 2009 – 2010 Research Associate at Brookhaven National Laboratory: i) laboratory investigation of recycling chemistries, ii) field research of environmental impacts of utility-scale solar energy in Northeastern climates, iii) life cycle assessment of concentrated solar energy power plants.
- 2002 – 2008 Scientific research at University of California: i) chemical fate and transport, ii) hydrology, iii) sustainable energy development.
- 2006 – 2007 Consulting scientist for Metaheuristics Inc. to perform laboratory measurements of phase change enthalpies of human insulin protein, for development of oral delivery methods.
- 2000 – 2001 Research engineer at Coherent Technologies Inc. on a) software engineering for LIDAR identification of vehicles, and b) laboratory experiments documenting laser bidirectional reflectance distribution functions from field objects.
- 1998 – 2000 Research Intern: groundwater pollutant transport modeling for Sandia National Laboratory, software engineering for General Atomics Inc., Stanford Linear Accelerator Library, and IBM.

Management Experience

- 2006 – 2008 Teaching assistant for fourteen different courses, supervising classrooms of up to 120 students. Tasks included a) course design, b) homework and test design, c) leading lectures and group discussions, and d) grading. Courses taught ranged from environmental science, to mechanical engineering, to computer science, to physics and chemistry.
- 2006 – 2007 Completed a one-year Graduate Program in Management Practices at UCSB and earned Certificate in Technology Management Practices.

- 2004 – 2009 Managed the financial, physical, and social operations of a six-person cooperative house in Santa Barbara, CA. This was a paid position that included facilities maintenance, construction management, financial management, and acting as a liaison between the tenants and the landlord.
- 2003 – 2009 Supervised the research of two undergraduates, four graduate students, and one post-doctoral student, for projects up to one year in length. The diverse set of graduate students came from Germany, India, Japan, and the USA.

Skill Set

Electronics

Analog and digital electronics, circuit design and fabrication, semiconductor processing, RS232 and IP communications.

Computer Programming

C, Basic, MATLAB, some C++, Unix scripting, LabView, Geographical Information Systems, Photoshop Suite, AutoCAD, Simapro LCA software.

Chemical Analysis

Gas chromatograph, ICP atomic emission spectroscopy, electrochemical redox analysis, electrode specific measurements, oxygen sensing.

Automation and Fabrication Control

Experienced with stepper motor control, automated machine communications, and high-speed photography of mechanical systems.

Management

Life cycle assessment of environmental impact of manufactured products (ISO 14040 series).

Professional Memberships

- American Institute of Chemical Engineering
- American Geophysical Union
- American Chemical Society

Review Board Referee

- Publication Reviewer for the Journals: i) Energy, ii) Physics of Fluids, and iii) Geophysical Research Letters
- Grant Reviewer for the Organizations: i) US National Science Foundation

Professional Engineering Licensing

Passed Engineer in Training (EIT) exam in California on April 15, 2009 and look forward to professional certification as a Mechanical, Chemical, or Environmental Engineer.

Patents

US Provisional Patent Application 61/295,638 filed on January 15, 2010 for an invention I made during my PhD work: adaptable and inexpensive manufacturing process for microspheres.

Journal Publications

- MacIntyre, S., A. Jonsson, M. Jansson, J. Adberg, D. Turney, S. Miller, **The Gas Transfer Coefficient and Turbulence at the Air-Water Interface in a Stratified Lake.** Geophysical Research Letters (in review June 2010)
- Turney, D.E. and S. Banerjee **Surface Divergence Patterns and Gas Transfer at an Air-Water Interface.** Journal of Geophysical Research (to be submitted August 2010)
- Turney, D.E., A. Anderer and S. Banerjee **A Method for Three-Dimensional Particle Image Velocimetry (3D-PIV) of An Air-Water Interface.** Measurement Science & Technology 20 () 045403 (12pp), 2009
- Turney, D.E. and S. Banerjee, **Transport Phenomena at interfaces Between Turbulent Fluids.** AIChE Journal, February, 2008
- Turney, D.E., W. C. Smith and S. Banerjee. **A measure of near-surface turbulence that predicts air-water gas transfer in a wide range of conditions."** Geophysical Research Letters. Vol. 32, L04607, 2005

Book Chapters

Turney, D.E., and S. Banerjee, **Near surface turbulence and its relationship to air-water gas transfer rates**, section in the book *Gas Transfer At Air-Water Surface*, ed. S. Komori, 2011.

Conference Participation

- MacIntyre, S., S. Miller, A. Jonsson, J. Aaberg, M. Jansson, D. Turney, and R. Simons. **Modeling the Gas Transfer Coefficient and Gas Fluxes in Stratified Lakes**, Fall American Geophysical Union Conference, San Francisco, November, 2010
- Fthenakis V. and Damon Turney. **Solar Energy: Impacts and Management Measures**. The Wildlife Society 37th Annual Conference, Snowbird, UT, October, 2010
- Fthenakis V., Jun-Ki Choi, Hyung Chul Kim, Damon Turney, Garvin Heath, Pamala Sawyer. **Environmental Profiles of Photovoltaics: Critical Review and Harmonization of Thin-film Life-cycle Assessments**, American Center for Life Cycle Assessment, LCA X Conference, November 3, 2010
- Banerjee, S. and D. Turney, **Near surface turbulence and its relationship to air-water gas transfer rates**, Keynote Lecture at the 6th International Symposium on Gas Transfer at Water Surfaces, Kyoto, Japan, May 19th 2010.
- Turney, D.E., and S. Banerjee, **Open-Channel Flow Turbulence and Air-Water Gas Transfer**, as a talk in AIChE Annual Meeting, Nashville, 2010.
- Turney, D.E. and S. Banerjee, **Air-Water Surface Divergence Patterns and Their Relation to Interfacial Mass Transfer**, Poster OS31B-1257, Fall American Geophysical Union Conference, San Francisco, CA 2008
- Turney, D.E., and S. Banerjee, **Gas Transfer and Surface Divergence at an Air-Water Interface in Channel Flow**, as a talk in American Institute of Chemical Engineering Annual Meeting, San Francisco, 2006.
- Banerjee, S., and D.E. Turney, "**Turbulence and Gas Transfer at the Air-Water Interface**", in *International Conference on Environmental Fluid Mechanics*, Guwahati, India, 2005.
- M T Colee, T H Painter, J Dozier, D.E. Turney, N Molotch, "**A Spatially-Explicit Snow Model of a Mid-latitude Alpine Basin**". Fall Annual American Geophysical Union Meeting, San Francisco, 2002
- Moyer, R.A., D. Rudakov, T.L. Rhodes, E.J. Doyle, W.A. Peebles, C.L. Rettig, T.E. Evans, P.A. Groebner, P.A. Politzer, and D.E. Turney, "**Complex Dynamics of Turbulent Edge Transport in DIII-D**", in *41st Annual Meeting of the Division of Plasma Physics*, The American Physical Society, Seattle, WA, 1999.
- Turney, D.E., R.A. Moyer, D. Rudakov, T.L. Rhodes, E.J. Doyle, C.L. Rettig, T.E. Evans, and J.G. Watkins, "**Time Series Statistics of Fluctuating Edge Parameters in DIII-D Tokamak Fusion Test Reactor**", in *41st Annual Meeting of the Division of Plasma Physics*, The American Physical Society, Seattle, WA, 1999.

Volunteer and Community Work

- Santa Barbara Channelkeeper: Watershed Stream Sampling
- US Forest Service Trail Building in Tongass National Forest
- Ketchikan Community Education and Cultural Center Volunteer: Facilities Maintenance
- Santa Barbara Earth Day: Construction and Deconstruction, and Booth Help
- Get-out-the-Vote Drive for the 2004 US national election.
- Park Slope Food Coop donation crew for Brooklyn CHIPS Soup Kitchen.