Adam L. Lambert

Last update on April 8, 2015

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Summary

I am a detail oriented problem solver with a lifelong interest in science and mathematics who enjoys working on engaging new problems in fast-paced, collaborative environments. My strong mathematical background combined with a robust understanding of thermodynamics and transport processes allows me to quickly learn and apply relevant physics. I have excellent written and verbal communication skills and I am adept at scaling information for accessibility based on the background and interests of the audience.

Education

Oregon State University — Corvallis, OR
PhD. in Chemical Engineering — *2010 – 2014*
Researched kernel-based upscaling of partial differential equations as they apply to multiscale chemical transport problems.

Oregon State University — Corvallis, OR
M.S. in Chemical Engineering — *2006 – 2010*
Studied non-local effects of inertial flows on dispersion through periodic apertures.

Virginia Polytechnic Institute and State University — Blacksburg, VA
B.S. in Biological Systems Engineering — *2001 – 2006*
Focus in bioprocess engineering.

Experience

Antropy Technology — Mountain View, CA
Mathematical Modeler — *Oct '14 – present*
Conducting feasibility studies for optical waveguide couplers via direct integration of Maxwell's equations and subsequently communicating results to a variety of business partners and clients from diverse backgrounds.

Oregon State University — Corvallis, OR
Graduate Teaching Assistant — *Jan '14 – June '14*
Teaching introduction to MATLAB for first year students with a focus on syntax and algorithm design as well as process data analysis laboratory sections with a focus on design of experiements.

Oregon State University — Corvallis, OR
Graduate Research Assistant — *Jan '08 – Jan '14*
Independently investigated a complex application of the method of volume averaging for producing balance laws which accurately predict multiscale transport processes in terms of a smoothed, "model scale" variable, while accounting for rate-limited processes occurring below the resolution of the model scale. This involved extensive study of transport processes and advanced mathematics and built directly on previously published work in multiscale transport.

Pacific Northwest National Lab — Corvallis, OR
Visiting Researcher — *Jun '07 – Sept '08*
Learning to solve transport problems via finite volume method using the commercial CFD software Star-CD. Introduction to Linux operating systems and command line based computation. Studied verification of simulations via benchmark problems and validation of solutions via grid convergence studies.

Virginia Polytechnic Institute and State University — Blacksburg, VA
Undergraduate Research (Capstone Project) — *Jan '06 – June '06*
Performed a proof-of-concept experiment examining the immobilization of cerium-oxide nanoparticles in hydrogel for scavenging free radicals produced via histamine response in bacterial cell cultures. These experiments included basic laboratory practices such as pipetting and measuring, as well as operation of laboratory equipment such as an autoclave, fume hood, vacuum oven, and sonicator as well as exposure to good laboratory practices and adherence to strict safety protocols.

Virginia Polytechnic Institute and State University — Blacksburg, VA

Undergraduate Research Assistant — *Nov '02 – May '03*

Studied hydrolysis of cotton gin waste for biofuel production by performing sample composition tests for total ash content and total non-polar soluble compounds, later measuring enzymatic hydrolysis using HPLC.

Presentations and Publications

Ernest Demaray, Adam Lambert, Antropy Technology. *Coupling of Surface light to Lateral Modes of a Waveguide or Photonic Structure, A Quantitative FDTD Tool for SubWavelength Devices.* NCCAVS Feb. 19, 2015. Tech. Innovation for Next Gen. Material and Manufacturing, San Jose CA.

Adam Lambert. *Effectiveness factor in reactive transport in porous media.* American Geophysical Union 2012 Fall Meeting Oral Session: Anomalous Transport, Mixing and Reaction in Hydrological Systems (H011).

Marshall C. Richmond, William A. Perkins, Timothy D. Scheibe, Adam Lambert, Brian D. Wood. *Flow and axial dispersion in a sinusoidal-walled tube: Effects of inertial and unsteady flows.* Advances in Water Resources 62 (2013) 215 - 226 .

Adam Lambert. *Modeling rate-limited processes along non-uniform surfaces via the method of volume averaging.* PhD. dissertation submitted to Oregon State University.

Adam Lambert. *Advection-diffusion in inertial flow through periodically converging-diverging tubes.* M.S. thesis submitted to Oregon State University.

Skills

Technical expertise (from research): Extensive knowledge of fluid flow, chemical transport, heat transfer, and rate-limited processes. Experience with basic unit operations including ion-exchange columns, CSTR, and various filtration processes. Experience with basic design of photonic devices including electromagnetic wave propagation and fundamentals of waveguides as well as photoluminescent materials. Familiarity with catalysis and protein separation techniques(i.e. filtration, chromatography) as well as common semiconductor and thin film production processes.

Mathematical expertise: Extensive knowledge of partial differential equations including integral and kernel based analytical solutions and numerical solutions via the finite volume method, finite element method, and finite difference method. Experience with a variety of upscaling techniques, as well as statistical and kernel based post-processing techniques.

Computational expertise: Extensive knowledge of MATLAB, COMSOL (finite element), Star-ccm+ (finite volume). Competent user-level knowledge of Linux-based operating systems and the typesetting language LaTeX, as well as the FDTD solvers XFdtd and OptiFDTD. Familiarity with Microsoft Office and Python.

Relevant Course Work

Process Engineering: Fluid Flow, Mass Transfer, Reactor Design, Unit Operations, Transport Processes, Special Topic - Hydrodynamic Stability, Turbulent Flow, Special Topic - Turbulent Modeling, Bioprocess Engineering, Food Process Engineering, Introduction to Circuits, Instrumentation.

Mathematics: Differential Equations, Analytical solutions to Ordinary Differential Equations, Analytical solutions to Partial Differential Equations, Numerical solutions to systems of Ordinary Differential Equations, Numerical solutions to Partial Differential Equations, Finite-volume solutions to non-linear Partial Differential Equations, Special Topic - Upscaled Solutions to Partial Differential Equations, Linear Algebra, Vector Calculus

Physical Science: Physical Chemistry, Organic Chemistry, General Chemistry, Thermodynamics, Physics, Microbiology

Interests

Non-exhaustive and in alphabetical order: art, bicycles, biology, books, camping, coffee, dogs, ethics, flow state (also referred to as peak psychological experience), hierarchical multi-scale systems, history, kerosene lanterns, mindfulness, music, open source software, philosophy, physics, politics, proper barbecue, travel, vegetables, writing, yoga.