

Rebecca Allen

Ph.D. Student

*Computational Transport Phenomena Laboratory
Division of Physical Sciences and Engineering
King Abdullah University of Science and Technology
Thuwal 23955-6900, Kingdom of Saudi Arabia
Email: rebecca@kaust.edu.sa
Phone: +966 (0) 55 342 2810*

Education **Ph.D. Earth Science and Engineering**

King Abdullah University of Science and Technology, Saudi Arabia
Sept 2011 – present

Current Research Project:

- Numerical modeling and simulation of diffusive and convective transport of CO₂ through fluid-filled porous media: using lattice Boltzmann method for pore-scale modeling, and using finite difference method for Darcy's-scale modeling

Research Internship (summer 2012):

- Completed summer internship at OCCAM (Oxford Centre for Collaborative Applied Mathematics), England, U.K.
- Studied lattice Boltzmann method for fluid flow and transport modeling

Master of Science, Environmental Science and Engineering

King Abdullah University of Science and Technology, Saudi Arabia
Sept 2009 – May 2011

Masters Thesis Project:

- Modeling diffusion and density-driven convection of carbon dioxide in saline aquifers
- Used MATLAB programming language to run simulation

Research Internship (summer 2010):

- Completed summer internship at Utrecht University, Netherlands, in the Hydrogeology dept.
- Attended 1-week summer school course on the modeling of reactive transport in porous media

Bachelor of Civil Engineering & Society, Minor in Psychology

McMaster University, Canada
Sept 2003 – May 2009

Completed Design Projects:

- Water Resource Systems and Watershed Analysis
- Water and Wastewater Treatment Plant
- Sustainable Campus and Community

Work Experience

ArcelorMittal Dofasco, Civil Engineering Department

Hamilton, Ontario, Canada

May – Aug 2006, and May – Aug 2008

- Summer student in Civil Engineering department for steel production plant
- Created detailed drawings for structural steel projects such as equipment modification, platform design, fall arrest systems

City of Hamilton, Public Works Department

Hamilton, Ontario, Canada

May – Aug 2005

- Summer student in Public Works department, engineering team
- Analyzed engineering drawings in accordance with sewer and base plan checklists, and brought specific drawing mistakes to attention of engineer for correction

Computer Skills

MATLAB, FORTRAN 95, Microsoft Office, Latex, Mac OS, Linux OS, Windows OS, PALABOS

Awards

Recipient of “Most Outstanding Student” award at IEA GHG (International Energy Agency of Greenhouse Gas) summer school on Carbon Capture and Storage (CCS)
July 2013

- Awarded to two students, based on participation during group work and lectures, and demonstrating interest in the field of CCS.

Activities

Art Teacher for Winter Enrichment Program, KAUST, 2012

- Prepared lessons and taught an introductory drawing class to 40 students over a period of 4 days

Executive Member of SPE student chapter, KAUST, 2012

- Helped plan student events for the purpose of networking and petroleum engineering education

Conference Papers

- “Carbon Dioxide Sequestration: Modeling the Diffusive and Convective Transport under a CO₂ Cap”, presented at the 2012 SPE Annual Technical Symposium & Exhibition (ATS&E), held on 8-11 April 2012 in Al-Khobar, Saudi Arabia
- “A New Lattice Boltzmann Equation to Simulate Density-Driven Convection of Carbon Dioxide”, presented at the 2013 SPE Reservoir Simulation Symposium, held on 18-20 February 2013 in The Woodlands, Texas, USA