

Peter K. Kang

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EDUCATION

Massachusetts Institute of Technology (MIT)	Cambridge, MA, USA
Candidate for Ph.D. in Civil and Environmental Engineering	2010 - 2014
Thesis: Characterization and Stochastic Modeling of Anomalous Transport through Fracture Networks	
Advisor: R. Juanes	GPA: 5.0/5.0
M.S. in Civil and Environmental Engineering	2008 - 2010
Thesis: Transport in Lattice Fracture Networks: Concentration Mean and Variance	
Advisor: R. Juanes	GPA: 5.0/5.0
Seoul National University (SNU)	Seoul, South Korea
Bachelor of Civil, Urban and Geosystem Engineering	2004 - 2008
Graduated with Summa Cum Laude	Overall GPA: 3.99/4.3, Major GPA: 4.09/4.3
The University of Auckland	Auckland, New Zealand
Exchange Student	2007

HONORS

Martin Family Society of Fellows for Sustainability, MIT, 2013
Public Service Fellowship, MIT, 2013
Outstanding Student Paper Award from the American Geophysical Union (AGU) Fall meeting, 2011
Community choice awards from MIT IDEAS / Global Challenge competition (\$5,000), 2011
Project development grant from MIT IDEAS / Global Challenge competition (\$1,000), 2011
Outstanding Student Paper Award from the American Geophysical Union (AGU) Fall meeting, 2010
Department of Energy Office of Science Graduate Fellowship (DOE SCGF) award, 2010-2013
National Science Foundation Graduate Research Fellowship (NSF GRF) award, 2010 (declined)
Top honor from graduating Civil, Urban and Geosystem Engineering Department at SNU, 2008
Outstanding Paper from Korea Water Resource Corporation, 2007
Outstanding Research from BK SIR technical competition in South Korea, 2007
Outstanding Poster from BK SIR technical competition in South Korea, 2007
Research Grant on Fusegate from the Center of Teaching and Learning at SNU (\$5,000), 2006
Full undergraduate tuition scholarship from Korea Science and Engineering Foundation, 2004

RESEARCH EXPERIENCE

Massachusetts Institute of Technology (MIT) , Cambridge, MA	2008 - Current
Title: Graduate Research Assistant	
Supervisor: R. Juanes, Department of Civil and Environmental Engineering	
• Flow and transport through fracture networks (theory, numerical modeling, laboratory and field experiments)	
• Joint inversion of flow and geophysics data to characterize fractured media (theory, numerical modeling and laboratory experiments)	
University of Rennes 1 , Rennes, France	2011 Summer, 2012 Summer
Title: Visiting Research Assistant	
Faculty host: T. Le Borgne, O. Bour, Department of Geosciences	
• Multi-tracer transport experiment on fractured granite under ambient, single and cross-borehole pumping conditions to understand origins of anomalous transport through fractured media (field scale experiment and modeling).	

Technical University of Catalonia, Barcelona, Spain 2009 Summer, 2010 Summer, 2013 Summer
Title: Visiting Research Assistant
Faculty host: M. Dentz, Department of Geosciences (IDAEA-CSIC)
• Anomalous transport through fracture networks with highly heterogeneous permeability field (theory and numerical modeling).

NASA's Goddard Space Flight Center, Greenbelt, Maryland 2007 Winter
Title: Undergraduate Research Assistant
Faculty host: William K.-M. Lau (Chief of the Laboratory for Atmospheres), The Laboratory for Atmospheres
• Investigated sources of aerosols over East Asia and their interaction with cloud and precipitation (modeling).

The University of Auckland, Auckland, New Zealand 2007 Fall
Title: Undergraduate Research Assistant
Faculty host: B. Melville, Hydraulics Laboratory
• Sediment transport and deposition in river systems (laboratory experiment).

Seoul National University, Seoul, South Korea 2006 - 2007
Title: Undergraduate Research Assistant
Faculty host: I. -W. Seo, Department of Civil, Urban and Geosystem Engineering
• Flow and pollutant dispersion in meandering channels (laboratory experiment).

Seoul National University, Seoul, South Korea 2006
Title: Principal investigator
Project funder: The Center of Teaching and Learning at Seoul National University
• Initiated and conducted research on effective spillway gate to enhance flood control capabilities of dams (laboratory experiment and numerical modeling).

TEACHING EXPERIENCE

Massachusetts Institute of Technology (MIT), Cambridge, MA 2013 Spring. Two lectures
Title: Class organizer and Teacher for Water and Sanitation Infrastructure in Developing Countries (1.851J)
• Taught two classes on groundwater issues in developing countries and the importance of understanding flow and transport through porous media.
• The lecture format and problem set supervised by Susan Murcott (senior lecturer in course 1).

Massachusetts Institute of Technology (MIT), Cambridge, MA 2010 Spring, Fall
Title: Class organizer and Teacher for SPARK and SPLASH programs
• Physical experiment and numerical simulation of groundwater flow and its influence on global warming for 7th-12th graders (SPARK).
• Hydraulic fracturing and flow through fractures for 7th-12th graders (SPLASH).

LEADERSHIP EXPERIENCE

Project AQUAW, Dar es Salaam, Tanzania 2011 - current
Title: Project founder and leader
• Initiated an international development project and won project funds from MIT and Korea appropriate technology research center.
• Modified and installed biosand filter for the Kiwalani community in Tanzania and started sustainable neighborhood level water distribution service.

International Centre for Theoretical Physics (ICTP), Trieste, Italy 2008 Summer
Title: Leader of a subgroup
• Participated Targeted Training Activity on seasonal predictability in tropical regions and workshop on

multi-scale predictions of the Asian and African Summer Monsoon.

- Presented a proposal for the statistical downscaling scheme for the weather forecast.

Triangulated Student Activity, Taipei, Taiwan

2006 Summer

Title: Leader of a subgroup

- Participated student seminar activity with selected civil and environmental engineering students from National Taiwan University, Seoul National University and Tokyo University
- Participated as a leader of the water engineering group at Seoul National University.

JOURNAL PUBLICATIONS

- **P. K. Kang**, J. Song and S. U. Hong. An International Development Project Combining Appropriate Technology and Mobile Application: Proposal and Preliminary Field Work. *International Development and Cooperation Review*, 4(1), 89-119 (2012).
- **P. K. Kang**, M. Dentz, Tanguy Le Borgne and R. Juanes. Spatial Markov Model of Anomalous Transport Through Random Lattice Networks. *Physical Review Letters*, 107, 180602 (2011).
- **P. K. Kang**, M. Dentz and R. Juanes. Predictability of anomalous transport on lattice networks with quenched disorder. *Physical Review E*, 83(3), 030101(R) (2011).

JOURNAL PUBLICATIONS in preparation

- **P. K. Kang**, T. Le Borgne, O. Bour, M. Dentz and R. Juanes. Origin of Anomalous Transport through Fractured Media: Modeling and Observations from a Field Test in Fractured Granite.
- **P. K. Kang**, Y. Zheng, X. Fang, R. Wojcik, D. McLaughlin, S. Brown, M. C. Fehler, D. R. Burns and R. Juanes. Joint flow-seismic inversion for characterizing fractured reservoirs: theoretical approach and numerical modeling.

CONFERENCE PRESENTATIONS

- **P. K. Kang**, T. Le Borgne, O. Bour, M. Dentz and R. Juanes. Anomalous transport in fracture networks: field scale experiments and modeling. American Geophysical Union (2012)
- **P. K. Kang**, T. Le Borgne, O. Bour, M. Dentz and R. Juanes. Upscaling Fractured Media to Heterogeneous Lattice Networks: Modeling and Observations from a Field Tracer Tests in Fractured Granite. Gordon Research Conference: Flow and Transport in Permeable Media (2012)
- **P. K. Kang**, Marco Dentz, Tanguy Le Borgne, Ruben Juanes. Macroscopic Modeling of Anomalous Transport on Heterogeneous Lattice Networks. Gordon Research Seminar: Flow and Transport in Permeable Media (2012) **Oral presentation.**
- **P. K. Kang**, Marco Dentz, Tanguy Le Borgne, Ruben Juanes. Macroscopic Modeling of Anomalous Transport on Heterogeneous Lattice Networks. Computational Methods in Water Resources (2012). **Oral presentation.**
- **P. K. Kang**, T. Le Borgne, O. Bour, M. Dentz and R. Juanes. Origin of Anomalous Transport through Fractured Media: Modeling and Observations from a Field Test in Fractured Granite. American Geophysical Union (2011) **Oral presentation. OSPA award received.**
- C. Nicolaidis, **P. K. Kang**, L. Cueto-Felgueroso, M. Dentz, and R. Juanes. Disease Spreading in Lattice Networks with Flux Disorder. American Geophysical Union (2011)
- **P. K. Kang**, M. Dentz and R. Juanes. Effective Transport in Lattice Fracture Networks with Uncorrelated and Correlated Velocity Field. American Geophysical Union (2010). **OSPA award received.**
- **P. K. Kang**, M. Dentz and R. Juanes. Effective Solute Transport with Linear Sorption in Lattice Fracture Networks. Computational Methods in Water Resources (2010). Oral presentation.
- **P. K. Kang**, M. Dentz and R. Juanes, Effective Transport in Fracture Networks: Concentration Mean and Variance. American Geophysical Union (2009).

- **P. K. Kang**, I. O. Jun, I. W. Seo and S. W. Park. A study on applicability of Fusegate as a flood control gate of dam and levee. Korea Water Resource Corporation (2007).

PROFESSIONAL SOCIETIES

American Geophysical Union, member