

ILENIA BATTIATO

Mechanical Engineering
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EDUCATION AND TRAINING

2010 Ph.D., Engineering Physics w/spec Computational Sciences, University of California San Diego
2008 M.S., Engineering Physics, University of California San Diego
2006 Laurea (5 Year Program, Environmental Eng., Summa cum Laude), Politecnico di Milano, Italy

RESEARCH AND PROFESSIONAL EXPERIENCE

2014-present, **Assistant Professor**, Mechanical Engineering Department, San Diego State University, San Diego, California. *Research on dynamics and transport processes in porous media; multiscale, mesoscale and hybrid methods; effective medium theories; perturbation methods; homogenization and upscaling; superhydrophobicity and drag reduction; granular matter; multiphase flow; reactive transport.*

2014-present, **Adjunct Assistant Professor**, Computational Science Research Center, San Diego State University, San Diego, California.

PI on NSF Project “Hybrid Models of Reactive Transport in Porous and Fractured Media”.

PI on DOE EMSL user proposal “Emergent Behavior of Micro-structured Surfaces”

2012-2014, **Assistant Professor**, Mechanical Engineering Department, Clemson University, Clemson, South Carolina.

2012, **Research Fellow**, Statistical and Applied Mathematical Sciences Institute (SAMSI), Raleigh, North Carolina. *Research on complex, random and superhydrophobic surfaces.*

2010-2012, Postdoctoral **Research Fellow**, Max Planck Institute for Dynamics and Self-Organization, Goettingen, Germany. *Research on granular matter and instability, laminar and turbulent flows over porous and granular beds.*

Summer 2009, **Ph.D. Intern**, Hydrology Technical Group, Pacific Northwest National Laboratory, Richland, Washington. *Research on reactive transport in porous media and hybrid models of reactive transport in subsurface systems.*

Summer 2008, **Ph.D. Intern**, Hydrology Technical Group, Pacific Northwest National Laboratory, Richland, Washington. *Research on applicability regimes of continuum-scale models of reactive transport in the subsurface.*

SELECTED PUBLICATIONS (h-index of 5)

Battiato, I., Rubol, S., 2014. ‘Single-parameter model of vegetated aquatic flows’, *Water Resources Research*, 50, doi:10.1002/2013WR015065.

Battiato, I., 2014. ‘Effective Medium Theory for drag-reducing micro-patterned surfaces in turbulent flows’, *European Physics Journal E*, 37,19.

Boso, F. and I. Battiato. 2013. “Homogenizability conditions of multicomponent reactive transport processes,” *Advances in Water Resources*, 62: 254-265, doi:10.1016/j.advwatres.2013.07.014.

Papke, A. and I. Battiato. 2013. “A reduced complexity model for dynamic similarity in obstructed shear flows,” *Geophysical Research Letters*, 40: 1-5, doi:10.1002/grl.50759.

Scheibe, T. D., E. M. Murphy, X. Chen, K. C. Carroll, A. K. Rice, B. J. Palmer, A. M. Tartakovsky, I. Battiato, and B. D. Wood. 2013. “An analysis platform for multiscale hydrogeologic modeling with emphasis on hybrid multiscale methods,” *Ground Water*, doi:10.1111/gwat.12179

- Battiato, I. and D. M. Tartakovsky. 2012. "From upscaling techniques to hybrid models," *Mathematical and Numerical Modeling in Porous Media: Applications in Geosciences*, CRC Press.
- Battiato, I. 2012. "Self-similarity in Coupled Brinkman/Navier-Stokes flows," *Journal of Fluid Mechanics*, 699: 94-114.
- Battiato, I. and J. Vollmer. 2012. "Flow-induced shear instabilities of cohesive granulates," *Physical Review E*, 86(3): 031301.
- Battiato, I., D. M. Tartakovsky, A. M. Tartakovsky, and T. D. Scheibe. 2011. "Hybrid models of reactive transport in porous and fractured media," *Advances in Water Resources*, 34(9): 1140-1150, doi:10.1016/j.advwatres.2011.01.012.
- Battiato, I. and D. M. Tartakovsky. 2011. "Applicability regimes for macroscopic models of reactive transport in porous media," *Journal of Contaminant Hydrology*, 120-121: 18-26.
- Battiato, I., P. R. Bandaru and D. M. Tartakovsky. 2010. "Elastic response of Carbon Nanotube forests to aerodynamic stresses," *Physical Review Letters*, 105, 144504.
- Battiato, I., D. M. Tartakovsky, A. M. Tartakovsky, and T. D. Scheibe. 2009. "On breakdown of macroscopic models of mixing-controlled heterogeneous reactions in porous media," *Advances in Water Resources*, 32(11): 1664-1673.

SYNERGISTIC ACTIVITIES

- American Geophysical Union, American Physical Society, Society for Applied and Industrial Mathematics, International Society for Porous Media
- Eastman Chemical Award for Excellence, Mechanical Engineering, Clemson University (2013)
- 'Aci e Galatea' Award to Career, City of Acireale, Italy (2012)
- Research Fellowship to attend UQ workshop at SAMSI (Statistical and Applied Mathematical Sciences Institute), Research Triangle Park, North Carolina (2012)
- Outstanding Student Paper Award (Hydrologic Sciences), AGU Fall meeting (2008)
- Fellowship from RUI foundation – Politecnico di Milano (2000)
- Referee for peer-reviewed journals, e.g., *Physical Review Letters*, *Journal of Fluid Mechanics*, *Physical Review E*, *Water Resources Research*, *Advances in Water Resources*, *Transport in Porous Media*, *SIAM Multiscale Modeling and Simulations*, *Journal of Fluids and Structures*
- NSF review panelist and NSF mail-in reviewer
- Session Co-organizer, e.g., 2014 AGU Fall Meeting 2014; *Computational Methods in Water Resources* (Hybrid Multiscale models in subsurface flow and transport); 2013 AGU Fall meeting (H088); 2013 Interpore.