

Christopher P. Bobko

Assistant Professor

Department of Civil, Construction, and Environmental Engineering
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Education

Ph.D., Structures and Materials, Department of Civil and Environmental Engineering,
Massachusetts Institute of Technology, 2008.

M.S., Department of Civil and Environmental Engineering,
Massachusetts Institute of Technology, 2005.

B.S.E., Department of Civil and Environmental Engineering,
Princeton University, 2003.

Positions Held

2008- pres. Assistant Professor, Department of Civil, Construction, and
Environmental Engineering, North Carolina State University

Research Interests

I am interested in studying the mechanics of materials, with a specific focus on innovative experimental and multi-scale approaches to the mechanics of civil engineering materials. I am interested in understanding these complex porous materials, including rocks, soils, cements, and other advanced materials, as a means to improve the design and long-term durability of engineering structures.

Teaching Interests

Solid Mechanics, Mechanical Behavior of Materials, Continuum Micromechanics

Journal Publications

Bobko, C., Gathier, B., Borges, L., Ulm, F.-J. (2008) "The nanogranular origin of friction and cohesion in shale - a strength homogenization approach to interpretation of nanoindentation results." (under revision)

Ortega, J.A., Bobko, C., & Ulm, F.-J. “Does Particle Shape Matter? Percolation thresholds and elasticity scaling relationships for transversely isotropic ellipsoidal particles” (in preparation)

Miller, M., Bobko, C., Vandamme, M., and Ulm, F.-J. (2008) “Surface Roughness Criteria for Cement Paste Nanoindentation.” *Cement and Concrete Research* **38** (4): 467-476.

Bobko, C., and Ulm, F.-J., (2008) “The Nano-Mechanical Morphology of Shale.” *Mechanics of Materials* **40**: 318-337.

Ulm, F.-J., Vandamme, M., Bobko, C., Ortega, J.A., Tai, K. and Ortiz, C. (2007) “Statistical Indentation Techniques for Hydrated Nanocomposites: Concrete, Bone, and Shale.” *Journal of the American Ceramic Society*. **90** (9) 2677-2692.

Bobko P., Roth, P., & Bobko, C. (2001) “Correcting the effect size of d for range restriction and unreliability.” *Organizational Research Methods*. **4** (1) 46-61.

Conference Proceedings

Tran, M., Abousleiman, Y., Hoang, S., Ortega, J.A., Bobko, C., and Ulm, F.-J. (2007) “The Acoustic Signature of Woodford Shale and Upscale Relationship from Nano-Scale Mechanical Properties and Mineralogy.” *Eos Trans. AGU*, 88 (52), Fall Meet. Suppl. Abstract T33C-1508. AGU Fall Meeting, San Francisco, CA, 10-14 December 2007.

Abousleiman, Y., Tran, M., Hoang, S., Bobko, C., Ortega, J.A., and Ulm, F.-J. (2007) “Geomechanics Field and Lab Characterization of Woodford Shale: The Next Gas Play.” Proceedings from ATCE 2007: SPE Annual Technical Conference and Exhibition, Anaheim, CA, 11-14 November 2007.

Ulm, F.-J., Vandamme, M., Bobko, C., Ortega, J. A. (2007) “The Nanogranular Nature of Hydrated Nanocomposites: Concrete, Clay and Bone.” In M. Jirasek, Z. Bittnar, and H. Mang (Eds.), Proceedings from MHM 2007: Modeling of Heterogeneous Materials with Applications in Construction and Biomedical Engineering, Prague, Czech Republic, 25-27 June 2007, 20-22.

Invited Seminars

Mewbourne School of Petroleum and Geological Engineering Seminar Series, Oklahoma University, Norman, OK, 2007.

Department of Civil, Construction, and Environmental Engineering, North Carolina State University, Raleigh, NC, 2008.

Department of Civil and Environmental Engineering, Colorado University, Boulder, CO, 2008.

Activities

General Manager, Management Board Member, and Producer/Host/DJ, WMBR Radio (2003 – 2008)

Officer and Member, MIT Wind Ensemble (2003 – 2008).

Manager, Princeton University Concrete Canoe Team (2001 – 2003).

Member, Princeton University Jazz Ensemble (1999 – 2003).