Matthew J. Black

Materials Research Laboratory Rm. 2242
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EDUCATION

University of California Santa Barbara (UCSB), Santa Barbara, CA
2nd Year PhD Student in Chemical Engineering with Dr. Matthew Tirrell.
Research Interests: Molecular self assembly, multifunctional nanostructures, drug delivery

Worcester Polytechnic Institute (WPI), Worcester, MA
Bachelor of Science, with High Distinction
Chemical Engineering with Biomedical Concentration, *May 2005* GPA: 3.92
Awards: Salisbury Prize (*2005* - awarded to the most meritorious seniors at WPI), Barry M. Goldwater Scholarship (*2004*), AIChE Donald F. Othmer Academic Excellence Award (*2003*), Tau Beta Pi Sophomore of the Year (*2003*), WPI Presidential Scholarship (*2001*)
Activities: American Institute of Chemical Engineers (President), WPI Men's Varsity Tennis Team (Captain), WPI Alpine Ski Team (Treasurer, Academic All American)

EXPERIENCE

University of California Santa Barbara, Santa Barbara, CA
PhD Student, *2005 – Present*
Creating multifunctional nanostructures by designing peptide amphiphiles that self assemble into mixed micelles with desired shape, size, and peptide head group function. Characterizing the nanostructures for their ability to target and treat tumors effectively *in vitro* and *in vivo*.

Worcester Polytechnic Institute, Worcester, MA
WPI Senior Project*, 2004-2005*
Designed and produced polymeric drug delivery systems by electrospinning. Measured and compared the kinetics of drug release in electrospun polymers to polymers produced by traditional techniques. Adapted a mathematical model to predict the release from electrospun polymers.

Johns Hopkins University, Baltimore, MD
Undergraduate Research Assistant, *Summer 2004*
Designed PEGylated biodegradable microparticles to target colon carcinoma cells with a specific antibody. Assessed the ability of the particles to bind to colon carcinoma cells under various shear conditions *in vitro.*

Worcester Polytechnic Institute, Worcester, MA
Undergraduate Research Assistant, *2003*
Used an Atomic Force Microscope to characterize the effects of cranberry juice and its components on molecular level adhesion of various fimbriated mutants of *E. coli.*

Swiss Federal Institute for Snow and Avalanche Research, Davos, Switzerland
WPI Interdisciplinary Project, *2003*
Provided a detailed assessment of the scientific, economic, social, and educational impacts that the Swiss Federal Institute for Snow and Avalanche Research has on its local community.

Worcester Polytechnic Institute, Worcester, MA
Peer Learning Assistant*, 2002 - 2005*
Helped math students in a conference hour built into students' schedules, led out of class help sessions, and corrected homework.

PUBLICATIONS

M. Kastantin, B. Ananthanarayanan, B. Lin, J. Ressl, M. Black, and M. Tirrell. "Increase of fluorescence anisotropy upon self-assembly in headgroup-labeled surfactants." 2007, *Macromolecular Bioscience.* 7: 189-194

Yatao Liu, Matthew Black, Lizabeth Caron, and Terri A. Camesano. "Role of Cranberry Juice on Molecular-Scale Surface Characteristics and Adhesion Behavior of *Escherichia coli*" 2006, *Biotechnology and Bioengineering.* 93:297-305