

Christopher R. Phaneuf

- CONTACT INFORMATION** Precision Biosystems Laboratory office: 404.894.4950
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- RESEARCH INTERESTS** Bio-instrumentation, Microfluidics, Optics, Precision Manufacturing, Molecular Biology, Materials Science, Mechanical Design, Electromechanical Systems
- EDUCATION**
- Georgia Institute of Technology**, Atlanta, GA
PhD Bioengineering August 2008 – Present
Expected graduation date: May 2012
- The Cooper Union**, New York, NY
BE Mechanical Engineering September 2004 – May 2008
Magna Cum Laude
Overall GPA: 3.7/4.0, Major GPA: 3.9/4.0
- HONORS AND AWARDS**
- American Society for Precision Engineering (ASPE) Annual Meeting Scholarship: 2010
Department of Homeland Security Graduate Fellowship: 2009
NSF Graduate Fellowship Honorable Mention: 2009
Nicholas M. Stefano Prize in Mechanical Engineering: 2008
Society of American Military Engineers (SAME) Scholarship: 2007
Federal SMART Grant: 2006-2007, 2007-2008
Cooper Union Dean's List: 01/05, 01/07, 05/07, 01/08, 05/08
Engineering with Vision Scholar: 2005-2006
Edward J. Barlow Scholar: 2005-2006
- PUBLICATIONS**
- C.R. Phaneuf, N. Pak, C.R. Forest, Modeling radiative heating of liquids in microchip reaction chambers, *Sensors & Actuators: A. Physical*, 167 (2011) 531-536.
- N. Pak, C. Saunders, C.R. Phaneuf, C.R. Forest, Plug-and-play infrared laser-mediated PCR in a microfluidic chip, *Biomedical Microdevices*. (in press)
- PRESENTATIONS**
- C.R. Phaneuf, N. Pak, D.C. Saunders, C.R. Forest, Modeling and Design of a Microscale Multiplexed Temperature Control System, *ASPE 26th Annual Meeting*, Denver, CO, November 13-18, 2011.
- C.R. Phaneuf, N. Pak, D.C. Saunders, C.R. Forest, Rapid, Independently Controlled Polymerase Chain Reaction via Multiplexed Laser Radiation, *The 15th International Conference on Miniaturized Systems for Chemistry and Life Sciences (MicroTAS)*, Seattle, WA, October 2-6, 2011.
- C.R. Phaneuf, N. Pak, C.R. Forest, An Instrument for Multi-Temperature, Multi-Chamber, and Micro-Liter Amplification of RNA/DNA, *Proceedings of the Workshop on Novel Sampling and Sensing for Improving Food Safety*, Atlanta, GA, June 16-17, 2011, p. 79-80.
- Phaneuf, C.R., C.R. Forest, Direct, High-Speed Milling of Polymer Microchamber Arrays, poster presentation, *Proceedings of the 25th Annual Meeting of the American Society for Precision Engineering*, Atlanta, GA, October 31-November 5, 2010.
- Phaneuf, C.R., N. Pak, C.R. Forest, Rapid, Low-Cost, Microfluidic Thermocycler for High-Throughput Genetic Diagnostics, oral presentation, *Proceedings of the ASME 2010 Summer Bioengineering Conference*, Naples, FL, June 15-19, 2010.
- Phaneuf, C.R., D.C. Leslie, J.P. Landers, C.R. Forest, Modeling and Experimental Validation of Dual Microfluidic Chamber, Infrared Laser-Mediated Polymerase Chain Reaction, poster presentation, *23rd International Symposium on MicroScale BioSeparations (MSB)*, Boston, MA, February 1-5, 2009.

SYMPOSIA	<p>Phaneuf, C.R., C.R. Forest, Rapid, microfluidic viral screening using Consensus-Degenerate Hybrid Oligonucleotide Primer PCR, <i>Georgia Tech Research and Innovation Conference (gtRIC) 2012</i>, Atlanta, GA, February 7, 2012.</p> <p>Phaneuf, C.R., V. Abhyankar, A. Hatch, Capturing bead-based mimic of circulating tumor cells using photopolymerized post array, poster presentation, <i>Sandia Intern Symposium 2010</i>, Sandia National Laboratories, Livermore, CA, Aug 5, 2010.</p> <p>Phaneuf, C.R., N. Pak, C.R. Forest, Arrayed, independently-controlled PCR thermocycling in a polymeric microchip, poster presentation, <i>Georgia Tech Research and Innovation Conference (gtRIC) 2010</i>, Atlanta, GA, February 8, 2010.</p>
ACADEMIC EXPERIENCE	<p>Georgia Institute of Technology, Atlanta, GA <i>Graduate Research Fellow</i> August 2008 – Present Advisor: Prof. Craig R. Forest Developing instrumentation for rapid, high-throughput molecular diagnostics</p> <p>Sandia National Laboratories, Livermore, CA <i>DHS Intern</i> June 2010 – August 2010 Advisor: Dr. Vinay Abhyankar Fabricated and tested photopolymerized microfluidic devices for cancer diagnostics</p> <p>University of Virginia, Charlottesville, VA <i>Visiting Scholar</i> May 2009 – August 2009 Advisor: Prof. James P. Landers Designed and built polymeric microfluidic devices for low-volume genetic analysis and performed electrophoretic separation and detection of DNA samples</p> <p>The Cooper Union, New York, NY <i>Undergraduate Researcher</i> September 2007 – May 2008 Advisor: Prof. David M. Wootton Explored the pathogenesis of obstructive sleep apnea through virtual and physical modeling of airway collapse using dynamic system simulation in MATLAB and a custom-fabricated model of the human pharynx</p> <p>University of Minnesota, Minneapolis, MN <i>NSF REU Research Intern</i> June 2007 – August 2007 Advisor: Prof. Perry Y. Li Devised ways to combine a high-speed rotary valve and a permanent magnet synchronous motor and built an experimental prototype of a computer-controlled brushless motor</p>
SKILLS	<p><i>Computer Tools:</i> C, Assembly, BASIC, Python, L^AT_EX 2_ε, NI LabView, Solidworks, MATLAB, Simulink, Fluent, Gambit, MasterCAM, AutoCAD, Rhino3D, Adobe Photoshop & Illustrator, Excel, PC/Mac/Linux platform fluent</p> <p><i>Math proficiency:</i> Calculus, Linear Algebra, Differential Equations</p> <p><i>Prototyping:</i> model making, casting, basic electronics</p> <p>Extensive machining and metal working experience</p> <p>Certified Engineer in Training (EIT)</p>
MEMBERSHIPS	<p>American Society for Precision Engineering (ASPE) American Society of Mechanical Engineers (ASME) Tau Beta Pi Order of the Engineer</p>