

## Jane E. Valentine

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CONTACT INFORMATION	Doherty Hall 2208 Department of Biomedical Engineering Carnegie Mellon University Pittsburgh, PA 15213 USA	<i>Voice:</i> (412) 268-4531 <i>Fax:</i> (412) 268-1173 <i>E-mail:</i> jane@andrew.cmu.edu <i>Web:</i> www.andrew.cmu.edu/user/jane/
RESEARCH INTERESTS	Mathematical modeling and optimization of engineering systems. Special focus on eigenvalue problems and inverse problems.	
EDUCATION	<b>Carnegie Mellon University</b> , Pittsburgh, Pennsylvania USA Ph.D., Biomedical Engineering, expected 2008 <ul style="list-style-type: none"><li>• Advisors: Steinar Hauan and Todd M. Przybycien</li><li>• Topic: Modeling and optimization of a MEMS acoustic-wave sensor</li></ul> <b>Carnegie Mellon University</b> , Pittsburgh, Pennsylvania USA B.S., Mathematical Sciences, with an additional major in French, May 2002	
SCHOLARSHIPS AND FELLOWSHIPS	Department of Homeland Security Science and Technology Dissertation Grant Award, 2006 Department of Homeland Security Science and Technology Graduate Fellowship, 2003 - 2005 Richard Moore Scholarship (Mathematics Scholarship): Carnegie Mellon University, 2001 Pederson's Award (Mathematics Scholarship): Carnegie Mellon University, 2000, 2001 National Merit Scholar, 1999 University Honor Scholar: University of Pittsburgh, 1998, 1999	
HONOR SOCIETIES AND ACHIEVEMENTS	College Honors, Mellon College of Science, 2002 University Honors, 2002 Phi Kappa Phi Undergraduate Research Award, 2002 Dean's List, High Honors: Spring 2000, Fall 2000, Fall 2001 Phi Beta Kappa (National Honor Society): Carnegie Mellon University, 2002 Mortar Board (National Service Honor Society): Carnegie Mellon University, 2001 Pi Mu Epsilon (National Mathematical Honor Society): Carnegie Mellon University, 2001 Phi Sigma Iota (National Modern Language Honor Society): Carnegie Mellon University, 2001 Phi Kappa Phi (National Honor Society): Carnegie Mellon University, 2000 Phi Eta Sigma (National Freshman Honor Society): University of Pittsburgh, 1998 National Society of Collegiate Scholars (NSCS): University of Pittsburgh, 1998	
JOURNAL PUBLICATIONS	Jane E. Valentine, Todd M. Przybycien and Steinar Hauan, <i>Design of Acoustic Wave Biochemical Sensors using MEMS</i> . Journal of Applied Physics, 15 March 2007.  Jane E. Valentine, Todd M. Przybycien and Steinar Hauan, <i>Optimal Ligand Patterning for an Acoustic Wave Biochemical Sensor</i> . In preparation.	
CONFERENCE PRESENTATIONS	Jane E. Valentine, Todd M. Przybycien and Steinar Hauan, <i>Modeling and design of a MEMS-based biosensor</i> . Presented at the AIChE annual meeting, San Francisco CA (USA), November 2003  Michael J. Bartkovsky, Jane E. Valentine, Todd M. Przybycien and Steinar Hauan, <i>A first generation MEMS membrane based biosensor</i> . Presented at the MERITS of Pittsburgh Exposition, Pittsburgh PA (USA), January 2004	

Jane E. Valentine, Todd M. Przybycien and Steinar Hauan *Response optimization of a multiplexed MEMS sensor* Jane E. Valentine, Todd M. Przybycien and Steinar Hauan. Presented at the AIChE annual meeting, Austin TX (USA), November 2004

Jane E. Valentine, Todd M. Przybycien and Steinar Hauan *Response surface determination of a multi-target MEMS sensor* Jane E. Valentine, Todd M. Przybycien and Steinar Hauan. Presented at the Department of Homeland Security Working Together: R&D Partnerships in Homeland Security, Boston MA (USA), April 2005

Jane E. Valentine, Todd M. Przybycien and Steinar Hauan, *Quantitative design approach for a multi-analyte acoustic-wave sensor*. Presented at the Chemical Engineering Graduate Student Association (ChEGSA) annual symposium, Pittsburgh PA (USA), October, 2005 (**Award: Best poster presentation**)

Jane E. Valentine, Todd M. Przybycien and Steinar Hauan, *Quantitative design approach for a multi-analyte acoustic-wave sensor*. Presented at the AIChE annual meeting, Cincinnati OH (USA), November 2005

Jane E. Valentine, Todd M. Przybycien and Steinar Hauan, *Sensitivity Optimization of a Multi-Analyte Acoustic-Wave Biochemical Sensor*. Presented at the Carnegie Mellon University Graduate Biomedical Engineering Society (GBMES) Research Symposium, Pittsburgh PA (USA), April 2006 (**Award: 2nd place presentation**)

Jane E. Valentine, Todd M. Przybycien and Steinar Hauan, *Numerical Optimization of a Biochemical Sensor Array*. Presented at the AIChE annual meeting, San Francisco CA (USA), November 2006

Jane E. Valentine, Todd M. Przybycien and Steinar Hauan, *Optimization of Functionalization Geometry for an Acoustic Wave MEMS Biochemical Sensor*. Presented at the Carnegie Mellon University Biomedical Engineering and Biotechnology Research Symposium (BEBRS), Pittsburgh PA (USA), April 2008 (**Award: 3rd place presentation**)

## COMMUNITY ACTIVITIES

*Executive Officer, The Generalists Club* **Fall 2004 - Fall 2007**  
The Generalists Club is an interactive discussion and film club focused on philosophy, culture, science, and the arts.

*Graduate Student Representative, CIT College Council* **Fall 2005 - Fall 2006**  
The Carnegie Institute of Technology (CIT) is the engineering college at Carnegie Mellon University. I served as the graduate student representative for my department to the CIT College Council, which deals with educational policy.

*Project Leader in the Engineering Your Future Biomedical Engineering Workshop, High School Group* **July 2006**  
Engineering Your Future (EYF) is an engineering outreach program for female middle school and high school students coordinated by the Society of Women Engineers at Carnegie Mellon University. I was responsible for designing an experiment, writing supplementary materials, and preparing educational presentations. I subsequently led a team of graduate students in guiding the participants through the experiment.

*Teaching Graduate Assistant in the Engineering Your Future Biomedical Engineering Workshop, Middle School Group* **July 2006**  
I was part of a team guiding middle school participants through experiments and information sessions.

*Member, DHS Student & Alumni Network Leadership Council* **Fall 2006 - Fall 2007**  
The Leadership Council governs and guides the DHS Student & Alumni Network, which serves students and alumni of Department of Homeland Security Student Programs.

EMPLOYMENT

*Teaching Assistant* **Fall 2001, Fall 2004 - Fall 2005**  
Carnegie Mellon University Department of Mathematical Sciences

*Teaching Assistant* **Spring 2003 - Spring 2004**  
Carnegie Mellon University Department of Biomedical Engineering

*Writing Assistant* **Fall 2000 - Spring 2001**  
Carnegie Mellon University Department of Modern Languages

*Mathematics Tutor* **Fall 2002 - Summer 2003**  
Self-employed; Pittsburgh, PA

*Library Associate* **Fall 1997 - Summer 2002**  
C.C. Mellor Memorial Library; Edgewood, PA

RELEVANT  
GRADUATE  
COURSEWORK

*Applied Mathematics and Analysis:* Ordinary Differential Equations, Partial Differential Equations, Real Analysis, Introduction to Lebesgue Integration, Introduction to Functional Analysis.

*Theoretical Mathematics:* Algebra I, Mathematical Logic I, Computability and Incompleteness, Proof Theory.

*Engineering and Physics:* Advanced Process Systems Engineering, Parallel and Scientific Computing, Advanced Signal Processing with Wavelets.

*Physics and Biology:* Physiology, Biological Transport.

REFERENCES

Prof. Steinar Hauan  
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Pittsburgh, PA 15213 USA  
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Prof. Jelena Kovacevic  
Department of Biomedical Engineering  
Department of Electrical and Computer Engineering  
Director, Center for Bioimage Informatics  
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