

## Paul R Brenner, PhD, PE

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### CURRENT RESEARCH

- Novel utilization of autonomous and heterogeneous resources for high performance computational science
- Transformative technologies for energy efficiency in high performance computing and data centers
- Accelerated parallel sampling algorithms for Monte Carlo based simulation methods

### RESEARCH, ENGINEERING, AND MANAGEMENT EXPERIENCE

Center for Research Computing, The University of Notre Dame, Indiana 2007 - Present  
High Performance Computing Scientist

- Advance computational based research at ND through HPC design, deployment, support, and user training
- HPC research and grant development to grow computational infrastructure and capabilities

U.S. DoD MSRC High Performance Computing Center, Wright Patterson AFB, Ohio 2005 - Present  
Infrastructure Planning and Design Consultant (U.S. Air Force Reserves)

- Research and evaluate developing HPC technologies with respect to projected infrastructure impacts
- Provide facility requirements analysis (electrical, structural, mechanical, and network)

445<sup>th</sup> Airlift Wing Civil Engineering Squadron, Wright Patterson AFB, Ohio 1998 - Present  
Engineering & Training Officer (U.S. Air Force Reserves)

- Responsible for the oversight of all project analysis, estimation, design, and planning components
- Facilitate the extensive training requirements for over 100 skilled personnel; active instructor

McGill AirClean Corporation, Columbus, Ohio 2000 - 2003  
Manager Civil/Structural Engineering

- Manage a staff of structural engineers, designers, and manufacturing planners for efficient project completion
- Develop technical design specifications for acquisition of industrial grade mechanical and structural components
- Complete engineering analysis/consulting reports such as: corrosion analysis, pollution capture, flow distribution

### TEACHING EXPERIENCE

University of Notre Dame, Notre Dame, IN 2003 – Present

Concurrent Assistant Professor (2007 – Present)

Graduate Research Assistant (2003 – 2007)

Instructor – Data Structures, Undergraduate Research, Computer Science and Engineering Service Projects

Teaching Assistant – Discrete Math, Object Oriented Programming, Computational Biophysics

Columbus State Community College, Columbus, Ohio 2001 - 2003  
Adjunct Faculty – Core Physics Sequence

### EDUCATION

University of Notre Dame, Notre Dame, IN 2007

Ph.D. Computer Science and Engineering

Field of Research: Computational Biophysics and High Performance Distributed Systems

The Ohio State University, Columbus, OH 2000

M.S. Materials Science and Engineering

Field of Research: Intermetallic Mechanical Behavior and Dislocation Mechanisms

University of Notre Dame, Notre Dame, IN 1998

B.S. Civil Engineering – Cum Laude

Area of Concentration: Structural Engineering

### PROFESSIONAL CERTIFICATION

Registered Professional Engineer, Ohio

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### RECENT AWARDS

Notre Dame CSC Ganey Research Grant Recipient	2006
National Engineering Week – New Faces in Engineering Nominee	2004
Air Force Junior Officer Delegate to International NATO Conference	2004
Graduate Teaching Assistant of the Year – Computer Science and Engineering	2003 - 2004

### PROFESSIONAL ORGANIZATIONS

Member - Association for Computing Machinery (ACM)  
Member - American Society for Engineering Education (ASEE)

### PUBLICATIONS

- P. Brenner, J. M. Wozniak, D. Thain, A. Striegel, and J. A. Izaguirre  
Biomolecular Path Sampling Enabled by Processing in Network Storage  
Sixth IEEE International Workshop on High-Performance Computational Biology, 2007
- J. M. Wozniak, P. Brenner, D. Thain, A. Striegel, and J. A. Izaguirre  
Making the Best of a Bad Situation: Prioritized Storage Management in GEMS  
Journal of Future Generation Computer Systems, 2007
- P. Brenner, C. R. Sweet, D. VonHandorf, and J. A. Izaguirre  
Accelerating the Replica Exchange Method Through an Efficient All-pairs Exchange  
Journal of Chemical Physics, 2007
- J. M. Wozniak, P. Brenner, D. Thain, A. Striegel, and J. A. Izaguirre  
Access Control for a Replica Management Database  
Proc Workshop on Storage Security and Survivability, ACM, 2006
- J. M. Wozniak, P. Brenner, D. Thain, A. Striegel, and J. A. Izaguirre  
Applying Feedback Control to a Replica Management System  
Proc. Southeastern Symposium on System Theory, IEEE Control Systems Society, 2006
- S. Hampton, P. Brenner, A. Wenger, S. Chatterjee, J. Izaguirre  
Biomolecular Sampling: Algorithms, Test Molecules, and Metrics  
Lecture Notes in Computational Science and Engineering, 2005
- D. Thain, S. Klous, J. Wozniak, P. Brenner, A. Striegel, J. Izaguirre  
Separating Abstractions from Resources in a Tactical Storage System  
Supercomputing, 2005
- G. Madey, C. Freeland, P. Brenner  
A Service Learning Program for CSE Students  
35<sup>th</sup> ASEE/IEEE Frontiers in Education Conference Proceedings 2005
- J. M. Wozniak, P. Brenner, D. Thain, A. Striegel, and J. A. Izaguirre  
Generosity and Gluttony in GEMS: Grid Enabled Molecular Simulations  
IEEE International Symposium on High Performance Distributed Computing Proceedings 2005
- P. Brenner, R. Srinivasan, R. D. Noebe, T. Lograsso, and M.J. Mills  
Dislocation Processes and Deformation Behavior in <001>-Oriented Fe<sub>x</sub>Ni<sub>40-x</sub>Al<sub>40</sub> Single Crystals  
High Temperature Structural Intermetallic Alloys, vol. 9, ed. J. H. Schneibel, et al. MRS Pub, Pittsburgh, 2000