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EDUCATION

Columbia University, New York, NY 10/2002 – present
Postdoctoral Research Scientist, Department of Chemistry and Center for Biomolecular Simulations. Research in biomolecular simulations and sampling methods.

California Institute of Technology, Pasadena, CA 8/2001 – 10/2002
Postdoctoral Scholar, Materials and Process Simulation Center. Research in quantum mechanical simulations of various materials. Biomolecular simulations – protein docking.

Brown University, Providence, RI 5/1992 – 12/1993, 9/1999 – 6/2001
Ph.D., Department of Physics. General research areas include Monte Carlo simulation and electronic structure calculation with *ab initio* methods. Thesis - Simulation Methods in Chemical Physics: Monte Carlo and *ab initio* studies.

Brown University, Providence, RI
Master of Science, Department of Physics, May 1992. Courses include Advanced Solid State Physics, Quantum Many-Body Theory.

University of California at Berkeley, Berkeley, CA
Bachelor of Science, Double major in Mathematics and Physics, August 1988.
Honors thesis: Lie Groups and Particle Physics.

HONORS / SCHOLARSHIPS

- Honors in Physics, 5/1988.
- Dean's List, 9/1985 – 5/1986.
- International House Fellowship, 9/1987 – 5/1988.
- McCormick Fellowship, 9/1988 – 6/1989

RESEARCH EXPERIENCE

Postdoctoral Research Scientist, 10/2002 – present
Columbia University, Department of Chemistry and Center for Biomolecular simulation
Advisor: Professor Bruce J. Berne

- Development of new sampling techniques.
- Application of novel sampling methods to protein docking.
- QM/MM method application to protein docking.

Postdoctoral Scholar, 8/2001 – 10/2002
California Institute of Technology, Materials and Process Simulation Center
Advisor: Professor William A. Goddard

- Hydrogen storage development study using quantum mechanical simulation.
- Development of Icarus software – front end for atomic simulations package.
- Monte Carlo implementation for DOCK molecular docking code.
- Development of MPSim-Dock – protein docking software.

Research Assistant, ***7/1999 – 7/2001, 6/1991 – 12/1993***
Brown University, Department of Chemistry
Advisor: Professor Jimmie D. Doll

- Excited states calculation with stochastic formulation of Feynman-Kac equation.
- Semi-classical calculation of vibrational spectra of H/Pd(110) system.
- Double-ended classical trajectory formulation for molecular dynamics.
- Stationary Phase Monte Carlo algorithm using Gaussian based window functions.
- Formulation of Wavelet Path Integral Monte Carlo.
- H/Cu(111) calculation using VASP (Vienna Ab initio Simulation Package).
- Nickel atom clusters calculation with various *ab initio* methods, particularly with NWChem software package running on IBM SP.

Senior Research Scientist, ***3/1994 – 4/1998***
Samsung Advanced Institute of Technology (Affiliated with Samsung Electronics),
Parallel Supercomputing Application Laboratory

- Organizing and managing High Performance Computing team.
- Analysis of various manufacturing processes using simulation techniques on supercomputers such as *Cray YMP* and *Intel Paragon.*
- Parallelizing existing serial codes to run on parallel supercomputers such as *Intel Paragon* and *HP-Convex X series.*
- Solving computer aided engineering problems using CAE software packages on both supercomputers and workstations.
- Devising simulation codes for engineering problems of various industrial applications such as chip design, PC case design, SAW filter design, FED design, etc.
- Performance analysis of programs running on supercomputers and workstations.
- Developing numerical algorithm for real-time dynamics problem programs.
- Planning and negotiating for the purchase of supercomputer hardware.
- Analyzing current issues in High Performance Computing and editing/publishing monthly journal of supercomputing for internal use.
- Construction of Beowulf Linux cluster systems.

TEACHING EXPERIENCE

Teaching Assistant, ***9/1993 – 12/1993***
Brown University, Department of Chemistry

- Assisting students with experiments.
- Grading laboratory reports and quizzes as well as corresponding course's exams.

Teaching Assistant, ***9/1990 – 5/1991***
Brown University, Department of Physics

- Assisting students with experiments.
- Grading laboratory reports and quizzes as well as corresponding course's exams.

Teaching Assistant, ***9/1987 – 5/1988***
University of California, Department of Physics

- Leading a problem solving session for general physics course.
- Grading homework sets and quizzes.

OTHER PROFESSIONAL EXPERIENCE

Team Manager, ***5/1998 – 6/1999***
Samsung Electronics Co., Solution Group
- Managing a team of engineers to develop solutions for PC servers.
- Developing and designing storage systems (RAID).
- Consulting for system integration with various solutions.
- Solution building/outsourcing.
- Consulting for Y2K problems on server products.
- Devising marketing strategy for storage solutions.

Interpreter (temporary), ***2/1993 – 5/1993***
Federal Products, Inc., Providence, Rhode Island
- Interpretation between English and Korean on business issues as well as technical engineering issues.

PUBLICATIONS / PRESENTATIONS
- Art E. Cho, J. D. Doll and David L. Freeman, *The Construction of Double-ended Classical Trajectories*, Chemical Physics Letters **229** (1994) 218-224.
- Art E. Cho, J. D. Doll and D. L. Freeman, *Wavelet Path Integral Monte Carlo,* Journal of Chemical Physics **117** (2002) 5971-5977.
- C. V. Diaconu, Art E. Cho, J. D. Doll and D. L. Freeman, *Broekn-Symmetry Unrestricted Hybrid Density Functional Calculations on Nickel Dimer and Nickel Hydride,* submitted to Journal of Chemical Physics (2003).
- Art E. Cho, John A. Wendel, Nagarajan Vaidehi, Wely Floriano, Prabal Maiti and W. A. Goddard III, *Hierarchical Docking Algorithm with Comprehensive Conformational Search and All Atom Forcefield Scoring Function with Solvation: MPSim-Dock*, submitted to Journal of Computational Chemistry (2004).
- Art E. Cho, Victor Guallar, Bruce J. Berne and Richard Friesner, *The Importance of Electric Charges in Molecular Docking: QM/MM Study,* in preparation (2004).
- *Monte Carlo methods for Molecular Systems,* Poster presentation at *New England Physical Chemistry Poster Session,* University of Pennsylvania, October, 1993.
- *Monte Carlo, Path Integral, and Wavelets,* Presentation at Physical Chemistry Tea Session, Brown University, April, 2000.
- *Small Nickel Clusters,* Poster presentation at Northeast Regional Meeting of American Chemical Society, June 2001.
- *Wavelet Path Integral Monte Carlo,* Presentation at Korea Institute for Advanced Study weekly seminar, December 2001.
- *Strategies for Docking Ligands to Protein,* Presentation at MSC 2002, Caltech, March 2002.
- *Basics of Protein docking,* Presentation at Korea Institute for Advanced Study weekly seminar, January 2003.
- *MPSim-Dock: Development of a Protein Docking Method,* Presentation at Seoul National University weekly solid state physics seminar, February 2003.

REFERENCES

Professor Jimmie D. Doll
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Applied Physics and Director of the Materials and Process Simulation Center
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Further references upon request.