Mitchell T. Ong

Durand Building
496 Lomita Mall
Stanford, CA 94305
650-723-4399 (work)

465 Stierlin Rd. Apt. #43
Mountain View, CA, 94043
217-220-0314 (mobile)
mitchong@stanford.edu

EDUCATION

Aug. 2004 – Sept. 2010 **University of Illinois at Urbana-Champaign** **Urbana, IL**
Ph.D in Chemistry 3.96 GPA

- **Ph.D Advisor:** Todd J. Martínez
- **Thesis:** The Photochemical and Mechanochemical Ring Opening of Cyclobutene from First Principles

Sept. 1999 – Dec. 2003 **University of California at Los Angeles** **Los Angeles, CA**
B.S. in Chemistry (Computer Specialization) 3.508 GPA

- **Undergraduate Advisor:** Emily A. Carter
- **Project:** Energetics and Kinetics of Vacancy Diffusion in Shocked Aluminum

RESEARCH EXPERIENCE

Oct 2010 – Present **Stanford University** **Stanford, CA**
Postdoctoral Associate Department of Materials Science and Engineering

- **Principle Investigator:** Evan J. Reed
- Manipulation of graphene's properties for electronic and photonic applications
- *Ab initio* calculations to demonstrate engineered piezoelectricity in graphene through selective surface adsorption of atoms

Nov 2004 – May 2010 **University of Illinois, Urbana-Champaign** **Urbana, IL**
Research Assistant Department of Chemistry

- Collaborated with experimentalists to design and screen new mechanically-active polymers that show beneficial chemical properties in response to external stress
- Implemented *ab initio* steered molecular dynamics to simulate the effect of external forces
- Modeled the energetics and kinetics of mechanochemical reactions
- Interfaced our *ab initio* molecular dynamics program with the Columbus software package to study excited state dynamics at a high level of theory

Jan. 2004 – Jun. 2004 **University of California, Los Angeles** **Los Angeles, CA**
Research Assistant Department of Chemistry and Biochemistry

- Modeled the kinetics of vacancy diffusion in aluminum with first principles quantum mechanics

TEACHING EXPERIENCE

Aug. 2006 **University of Illinois, Urbana-Champaign** **Urbana, IL**
Lab Assistant Materials Computation Center Summer School

- Organized and helped students with lab exercises using the GAMESS electronic structure program

Aug. 2004 – Dec. 2005 **University of Illinois, Urbana-Champaign** **Urbana, IL**
Teaching Assistant Department of Chemistry

- Chem. 442 (Fall 2004, 2005) – Undergraduate Quantum Mechanics
- Chem. 444 (Spring 2005) – Undergraduate Statistical Mechanics and Thermodynamics
- Assisted students in understanding course material and conducted review sessions for exams

PUBLICATIONS

- M. T. Ong and E. J. Reed, *Engineered Piezoelectricity in Graphene*, ACS Nano, (2012).
- J. M. Lenhardt, J. W. Ogle, M. T. Ong, R. Choe, T. J. Martinez, S. L. Craig, *Reactive Cross-Talk between Adjacent Tension-Trapped Transition States*, Journal of the American Chemical Society, 133 (10), 3222-3225 (2011).

- J. M. Lenhardt, M. T. Ong, R. Choe, C. R. Evenhuis, T. J. Martínez, S. L. Craig, *Trapping a Diradical Transition State by Mechanochemical Polymer Extension*, Science, 329 (5995), 1057-1060 (2010).
- M. J. Kryger, M. T. Ong, S. A. Odom, N. R. Sottos, S. R. White, T. J. Martinez, J. S. Moore, *Masked Cyanoacrylates Unveiled by Mechanical Force*, Journal of the American Chemical Society, 132 (13), 4558-4559 (2010).
- D. A. Davis, A. Hamilton, J. Yang, L. D. Cremar, D. Van Gough, S. L. Potisek, M. T. Ong, P. V. Braun, T. J. Martínez, S. R. White, J. S. Moore, N. R. Sottos, *Force-induced activation of covalent bonds in mechanoresponsive polymeric materials*, Nature, 459, 68 – 72 (2009).
- M. T. Ong, J. Leiding, H. Tao, A. M. Virshup, T. J. Martínez, *First Principles Dynamics and Minimum Energy Pathways for Mechanochemical Ring Opening of Cyclobutene*, Journal of the American Chemical Society, 131 (18), 6377 – 6379 (2009).
- J. D. Coe, M. T. Ong, B. G. Levine, T. J. Martínez, *On the Extent and Connectivity of Conical Intersection Seams and the Effects of Three-State Intersections*, Journal of Physical Chemistry A, 112 (49), 12559 – 12567 (2008).
- G. Ho, M. T. Ong, K. J. Caspersen, E. A. Carter, *Energetics and kinetics of vacancy diffusion and aggregation in shocked aluminum via orbital-free density functional theory*, Physical Chemistry Chemical Physics, 9, 4951 – 4966 (2007).

ORAL PRESENTATIONS

- M. T. Ong, J. Leiding, H. Tao, A. M. Virshup, T. J. Martínez, *Mechanochemical Ring Opening of Cyclobutene from First Principles Dynamics*, International Conference on Self-Healing Materials (ICSHM), June 28 – July 1, 2009, Chicago, IL
- M. T. Ong, J. Leiding, H. Tao, A. M. Virshup, T. J. Martínez, *Mechanochemical Ring Opening of Cyclobutene from First Principles Dynamics*, Student Summer Seminar Series, June 25, 2009, Stanford, CA

POSTER PRESENTATIONS

- M. T. Ong, J. M. Lenhardt, C. R. Evenhuis, S. L. Craig and T. J. Martínez, *Mechanochemical Stereomutation of Gem-difluorocyclopropane from First Principles*, Gordon Research Conference: Atomic and Molecular Interactions, July 18 – 23, New London, NH
- M. T. Ong, J. M. Lenhardt, C. R. Evenhuis, S. L. Craig and T. J. Martínez, *Mechanochemical Stereomutation of Gem-difluorocyclopropane from First Principles*, Molecular Quantum Mechanics Conference, May 24 – 29, 2010, Berkeley, CA
- M. T. Ong, J. Leiding, H. Tao, A. M. Virshup, T. J. Martínez, *Mechanochemical Ring Opening of Cyclobutene from First Principles Dynamics*, American Conference on Theoretical Chemistry, July 19 – 24, 2008, Evanston, IL
- M. T. Ong, and T. J. Martínez, *Ab Initio Molecular Dynamics of the Photochemical Ring Opening of Cyclobutene*, Frontiers in Theoretical Chemistry Symposium, May 31, 2005, Urbana, IL
- M. T. Ong, and E. A. Carter, *Vacancy Formation and Diffusion in Aluminum*, Materials Creation Training Program Symposium, November 14, 2003, Los Angeles, CA
- M. T. Ong, and E. A. Carter, *Vacancy Formation and Diffusion in Aluminum*, Science, Engineering and Mathematics Poster Session, August 27, 2003, Los Angeles, CA

LEADERSHIP

- **Department of Chemistry Graduate Student Advisory Committee (DCGSAC)**
  Communications (2008) – Responsibilities include promoting and organizing department events, maintaining website and conducting annual elections

COMPUTER SKILLS

- **Operating Systems:** Linux/Unix, Windows, Mac OSX

- **Programming Languages:**
  - Experience with Fortran
  - Familiar HTML, Python, C++, Ruby on Rails, Javascript

REFERENCES

- Available upon request