

Carrie Ann Menke, née Brindle

School of Natural Sciences
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EDUCATION

- 2005 Ph.D. in Physics
Concentration in Chemical and Materials Physics
University of California, Irvine
Dissertation Title: “Selected Chemical Physics Studies of Weakly Bound Systems”
Professor Kenneth C. Janda, PhD Advisor
- 2002 M.S. in Physics
University of California, Irvine
Thesis Title: “Vibrational Spectroscopy of Solvation in a Hydrogen-Bonded System: A Study of (NH₃)(HF)”
- 1996 B.S. Physics
University of Tennessee, Knoxville

PROFFESIONAL EXPERIENCE

TEACHING & LEADERSHIP EXPERIENCE

- 2008 – ***Physics Lecturer***
University of California, Merced
- Introductory Physics for Physical Science Majors (Physics 8)
 - Introductory Physics for Biological Science Majors (Physics 18, 19)
 - Classical Mechanics (Physics 105)
- 2007 – 2008 ***Tutor—Physics, Mathematics, Standardized Test Preparation***
Compass Education Group, Beverly Hills, CA
- 2000 – 2005 ***Teaching Assistant***
University of California, Irvine
- *Basic Physics* (Winter 2005 and 2000; Spring 2003, 2002, and 2000). A calculus-based course for non-majors. Duties included heading weekly discussion sections, tutoring and mentoring students, holding office hours, maintaining course website, writing and grading homework, quizzes, and exams.
 - *Chemical and Materials Physics Program* (Summers 2001-2003). Laboratory training for incoming Chemistry, Physics, and Engineering graduate students. Duties included training students on vacuum systems, cryogenic systems, gas handling, Fourier-Transform infrared spectroscopy, and data analysis.
- 2004 – 2005 ***Pedagogical Fellow***
University of California, Irvine
A service learning and mentorship program. Duties involved training incoming Engineering and Earth Systems Science graduate students for

teaching assistant duties. Courses included advanced studies in pedagogy, course design, and academic job preparation.

2002 – 2004 ***Substitute Lecturer***
Physics Department, University of California, Irvine
Gave various lectures for calculus-based basic physics course. Topics included simple harmonic motion, classical wave propagation, and reflection and refraction of light.

2002 – 2003 ***Private Tutor—Conceptual Physics***

RESEARCH EXPERIENCE

2007 – 2008 ***Scientific Consultant—Modern Paints Project***
Department of Science, Getty Conservation Institute, Los Angeles, CA
Investigated the role of ionization method and polarity for mass spectrometric identification of binding media and pigments in modern artist paints. Case study of paints used by artist Sam Francis.

2005 – 2007 ***Postdoctoral Fellow—Canvas Staining Project***
Department of Science, Getty Conservation Institute, Los Angeles, CA
Researched the role mass spectrometry can play in studying native and foreign materials removed from bare, unprimed canvas during wet conservation treatments of Color Field paintings. Included acrylic media identification for Color Field artists Kenneth Noland, Frank Stella, and Morris Louis.

2000 – 2005 ***Graduate Research Assistant***

- University of California, Irvine
 - Experimentation, modification, and maintenance of a molecular beam machine for studies on the effects of electron impact ionization and subsequent fragmentation of pure and doped liquid helium droplets, detected with an Extrel quadrupole mass spectrometer.
 - Anharmonic vibrational spectroscopy calculations of hydrogen-bonded (NH₃)(HF) using the ab initio Vibrational Self-Consistent Method via the GAMESS computational quantum chemistry package.
- Max-Planck-Institut für Strömungsforchung, Göttingen, Germany (Fall 2004)
 - Electron impact ionization and fragmentation of size-selected krypton clusters, formed by a supersonic expansion with subsequent helium beam scattering and detection using a quadrupole mass spectrometer.

INDUSTRIAL EXPERIENCE

1998 – 1999 ***Communications Engineer***
Rockwell Collins, Communications Systems Division, Richardson, TX
Thermal and mechanical modeling of circuit boards.

AWARDS & FELLOWSHIPS

2005-2007 Postdoctoral Fellowship

- Department of Science, Getty Conservation Institute, Los Angeles, CA
- 2004 Graduate stipend from the Physical and Chemical Graduate School of the Georg-August-Universität in Göttingen, Germany.
- 2003
- President's Dissertation Fellowship Award, UC Irvine
 - Most Promising Future Faculty Member Award, School of Physical Sciences, UC Irvine
 - Outstanding Contributions to the Department of Physics and Astronomy Award, UC Irvine
 - Brython-P. Davis Scholarship: UC Irvine
- 2002 Student Travel Scholarship, Western Spectroscopy Association, Pacific Grove, CA
- 2001 Travel Award from the UCI School of Physical Sciences to attend the "New Frontiers in Gas Phase Spectroscopy Workshop" in Champéry, Switzerland
- 1999-2000 GAAN Graduate Fellowship, administered through the UC Irvine Chemistry (2000) and Physics (1999) departments
- 1996 Douglas V. Roseberry Award, Department of Physics and Astronomy University of Tennessee, Knoxville

PUBLICATIONS

Michel Bouchard, Rachel Rivenc, Carrie Menke, Tom Learner. Micro FTIR and micro-RAMAN study of paints used by Sam Francis. e-PS, 2009, **6**, 27-37.

Carrie Ann Menke, Rachel Rivenc, Tom Learner. The use of direct temperature-resolved mass spectrometry (DTMS) in the detection of organic pigments found in acrylic paints used by Sam Francis. IJMS, 2009, **284**(1-3) 2-11.

C. Steinbach, M. Fárník, U. Buck, C.A. Brindle, K.C. Janda, Electron impact fragmentation of size-selected krypton clusters. J. Phys. Chem. A, 2006, **110**(29), 9108-9115.

Carrie A. Brindle, Melissa R. Prado, Kenneth C. Janda, Nadine Halberstadt and Marius Lewerenz. Structure and stability of Ne^+He_n : Experiment and Quantum Monte Carlo theory with "on the fly" electronic structure. J. Chem. Phys., 2005, **123**, 064312.

Carrie A. Brindle, Galina M. Chaban, R. Benny Gerber and Kenneth C. Janda. Anharmonic vibrational spectroscopy calculations for $(\text{NH}_3)(\text{HF})$ and $(\text{NH}_3)(\text{DF})$: fundamental, overtone, and combination transitions. Phys. Chem. Chem. Phys., 2005, **7**, 945-954.

ORAL PRESENTATIONS

"FTIR and Py-GC-MS characterization of artists' paints and implications for conservation and art history." 2006 American Chemical Society Meeting and Exposition, March 26-30, 2006, Atlanta, GA.

"Anharmonic Vibrational Spectroscopy Calculations for $(\text{NH}_3)(\text{HF})$ and $(\text{NH}_3)(\text{DF})$:"

Fundamental, Overtone, and Combination Transitions.” 52nd Annual Western Spectroscopy Association Conference, January 25-28, 2005, Pacific Grove, CA.

POSTER PRESENTATIONS

“FTIR and Py-GC-MS characterization of artists' paints and implications for conservation and art history.” American Chemical Society, 2006 American Chemical Society Meeting and Exposition, March 26-30, 2006, Atlanta, GA.

“Rare Gas Doped Helium Clusters: Neon System Lacks Magic.” 51st Annual Western Spectroscopy Association Conference, January 29-30, 2004, Pacific Grove, CA.

“Ionization and Fragmentation Dynamics of Molecules Embedded in Helium Clusters.” 50th Annual Western Spectroscopy Association Conference, January 29-31, 2003, Pacific Grove, CA.

“Anharmonic Effects of Hydrogen-Bonded NH₃-HF: Calculations and Future Experiments.” 49th Annual Western Spectroscopy Association Conference, January 30-February 1, 2002, Pacific Grove, CA.