

Gerardo Dominguez
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Education

U.C. Berkeley, Physics, Ph.D. 2005

Thesis: *Fluorescent Aerogels for the Capture and Identification of Hypervelocity Extraterrestrial Particles*

Advised by: Buford Price and Andrew Westphal

U.C. Berkeley, Physics, M.A. 2001

U.C. Berkeley, Physics with Honors, B.A. 1998

Undergraduate Thesis: *Use of Neural Networks for the Correction of Radiation Damage in Gamma-Ray Spectrometers*

Advised by: Robert Lin

Appointments

- Assistant Professor, Dept. of Physics, Cal State University San Marcos, Fall 2011-
- Visiting Scholar, Dept. of Chemistry and Biochemistry, U.C. San Diego, Fall 2011-
- Associate Project Scientist, Dept. of Chemistry and Biochemistry, U.C. San Diego (2011)
- Postdoctoral Researcher, U.C. San Diego, Dept. of Chemistry and Biochemistry (2005-2010)
- NASA Stardust Preliminary Examination Team, Cratering Sub-team Member
- Postdoctoral Researcher, U.C. Berkeley, Space Sciences Laboratory (2005)
- Graduate Student Researcher, U.C. Berkeley (1998-2005)
- National Physical Science Consortium Fellow, Corning Inc. (Summers of 1999 and 2000)
- Graduate Student Instructor, U.C. Berkeley (Fall 1998, Spring 1999, Fall 2000)

Awards

- **Cozzarelli Prize, Proceedings of the National Academy of Sciences**, 2011
- NASA, Group Achievement Award, (2010)
- U.C. President's Postdoctoral Fellowship (2007-2009)
- Ford Foundation Postdoctoral Fellowship (declined offer in 2007)
- Camille and Henry Dreyfus Foundation Environmental Chemistry Fellowship (2005-2007)
- National Physical Science Consortium Graduate Student Fellowship (1998-2004)
- NASA Graduate Student Research Fellowship (2001)
- Physics Undergraduate Research Scholar, U.C. Berkeley (1998)
- **Chancellor's Scholar**, U.C. Berkeley (1994-1998). Awarded to top 2% of incoming freshman
- Ronald E. McNair Scholar, U.C. Berkeley (1997-1998)

Publications (*=undergraduate student, **=graduate student)

25. G. Dominguez, G. Wilkins, M.H. Thiemens, *Dominguez et al. reply*, Nature 482, E1(2012).
24. L.M. Zhang, G. O. Andreev, Z. Fei, A. S. McLeod, G. Dominguez, M. Thiemens, A. H. Castro-Neto, D. N. Basov, M. M. Fogler, *Near-field spectroscopy of silicon dioxide thin films*, **Phys. Rev. B.**, 85, 075419 (2012).

23. M. Thiemens, S. Chakraborty, **G. Dominguez**, *The Physical Chemistry of Mass Independent Isotope Effects and Their Observation in Nature*, to appear in **Annual Reviews of Physical Chemistry**, (2012).
22. Z. Fei, G. O. Andreev, W. Bao, L. M. Zhang, A. S. McLeod, C. Wang, M. K. Stewart¹, Z. Zhao, **G. Dominguez**, M. Thiemens, M. M. Fogler, M. Tauber, A. Castro-Neto, C. N. Lau, F. Keilmann, D. N. Basov, *Infrared Nanoscopy of Dirac Plasmons at the Graphene-SiO₂ interface*, **NanoLetters**, **11**, 4701-4705 (2011).
21. A. Priyadashi, **G. Dominguez**, M. Thiemens, *Evidence of neutron leakage at the Fukushima nuclear plant from measurements of radioactive ³⁵S in California*, **Proceedings of the National Academy of Sciences**, **108**, 1442, (2011).
20. A. Priyadashi, **G. Dominguez**, J. Savarino, M. Thiemens, *Cosmogenic ³⁵S: A unique tracer to Antarctic atmospheric chemistry and the polar vortex*, **Geophysical Research Letters**, **38**, (2011).
19. **G. Dominguez**, G. Wilkins*, M. Thiemens, *On the Soret Effect and Isotopic Fractionation in High-Temperature Silicate Melts*, **Nature**, **473**, 70-73, (2011).
18. R. Shaheen, A., Abramian*, J. Horn, **G. Dominguez**, R. Sullivan**, M. H. Thiemens, *Detection of Oxygen Isotopic Anomaly in Terrestrial Atmospheric Carbonates and Its Implications to Mars*, **Proceedings of the National Academy of Sciences**, **107**, 20213-20218 (2010).
- Winner of the 2010 Cozzarelli Prize**
17. **G. Dominguez**, *A Heterogeneous Chemical Origin for the ¹⁶O-enriched and ¹⁶O-depleted Reservoirs of the Early Solar System*, **The Astrophysical Journal Letters**, **713**, L59-L63 (2010).
16. A. Ault**, C. Gaston**, Y. Wang*, **G. Dominguez**, M. Thiemens, K. Prather, *Characterization of the Single Particle Mixing State of Individual Ship Plume Events measured in the Port of Los Angeles and Long Beach*. **Environmental Science and Technology**, **44**, 1954–1961 (2010).
15. L. Brothers**, **G. Dominguez**‡, A. Abramian*, A. Corbin*, B. Bluen*, and M. Thiemens, *Optimized Low-Level Liquid Scintillation Spectroscopy of ³⁵S for Atmospheric and Biogeochemical Applications*, **Proceedings of the National Academy of Sciences**, **107**, 5311-5316 (2010).
14. **G. Dominguez**, *Time Evolution and Temperatures of Hypervelocity Generated Tracks in Aerogel*, **Meteoritics and Planetary Science**, **44**, 1431 (2009).
13. **G. Dominguez**, G. Wilkins*, M. Thiemens, *A Photochemical Model and Sensitivity Study of the Triple-Oxygen Isotopic ($\Delta^{17}O$) Composition of NO_y, HO_x, and H₂O₂ in a Polluted Boundary Layer*, **Atmospheric Chemistry and Physics Discussions**, **9**, 13355-13406, (2009).
12. Fabian, P., Rollenbeck, R., Spichtinger, N., Brothers**, L., **Dominguez, G.**, and Thiemens, M.: *Sahara dust, ocean spray, volcanoes, biomass burning: pathways of nutrients into Andean rainforests*, **Advances in Geosciences**, **22**, 85-94, (2009).
11. **G. Dominguez**, T. Jackson, L. Brothers**, B. Nguyen*, B. Barnett*, M. Thiemens, *Discovery and measurement of an isotopically distinct source of sulfate in Earth's atmosphere*, **Proceedings of the National Academy of Sciences**, **105**, 12769 (2008).

‡ corresponding author

10. J. M. Trigo-Rodríguez, **G. Domínguez**, M. J. Burchell, F. Hörz, J. Llorca, *Bulbous Tracks Arising From Hypervelocity Capture In Aerogel*, **Meteoritics and Planetary Science**, 42, 75 (2008).
9. M.J. Burchell, S.A.J. Fairey, P. Wozniakiewicz, D.E. Brownlee, F. Hörz, A.T. Kearsley, T.H. See, P Tsou, A. Westphal, S.F. Green S.F., J.M. Trigo-Rodríguez, **G. Domínguez**, *Characteristics of cometary dust tracks in Stardust aerogel and laboratory calibrations*, **Meteoritics and Planetary Science**, 42, 23 (2008).
8. D. Brownlee, P. Tsou, J. Aleon...**G. Domínguez** (33rd author, alphabetical) et al. , *Comet 81P/Wild 2 Under a Microscope*, **Science** 314, 1711 (2006).
7. F. Hörz, R. Bastien, J. Borg, ...**G. Domínguez** (8th author, alphabetical) et al., *Impact Features on the Stardust Collector and implications for Wild 2 Coma Dust*, **Science**, 314, 1716, (2006).
6. S. Brennan, K. Luening, P. Pianetta, J. Bradley, G. Graham, A. Westphal, C. Snead, **G. Domínguez**, *Near Edge Absorption Spectroscopy of Interplanetary Dust Particles*, **Phys. Scripta**, 2005, T115 (2005).
5. **G. Domínguez**, A.J. Westphal, M.L.F Phillips, S.M. Jones, G.A. Graham, A.T. Kearsley & G. Drolshagen, *Passive Detector Technology for the Capture of Micrometeoroids and Orbital Debris: Calorimetric Aerogels*, **Proceedings of the 4th European Conference on Orbital Debris**, ESA/ESOC Darmstadt Germany, 18-20th of April, (2005).
4. **G. Domínguez**, A.J. Westphal, S.M. Jones, M. L. F. Phillips, *Energy Loss and Impact Cratering in Aerogels: Theory and Experiment*. **Icarus**, v. 172, pgs. 613-624. (2004).
3. G.A. Graham, P.G. Grant, R.J. Chater, A.J. Westphal, A.T. Kearsley, C. Snead, **G. Domínguez**, A.L. Butterworth, D.S. McPhail, G. Bench, J.P. Bradley, *Investigation of ion beam techniques for the analysis and exposure of particles encapsulated by silica aerogel: Applicability for Stardust*. **Meteoritics and Planetary Science** 39, 1461-1474 (2004).
2. **G. Domínguez**, A.J. Westphal, S.M. Jones, M.L.F. Phillips, *Fluorescent Impact Cavities in a Titanium Doped Al₂O₃-SiO₂ Aerogel: Implications for the Velocity Resolution of Calorimetric Aerogels*. **Journal of Non-Crystalline Solids**, v. 350C pp 385-390. (2004).
1. **G. Domínguez**, A.J. Westphal , M.L.F. Phillips, S.M. Jones, *A Fluorescent Aerogel for Capture and Identification of Extraterrestrial Dust*, **The Astrophysical Journal**, v. 592, pgs. 631-635 (2003).

Working Manuscripts

G. Domínguez and G. Wilkins, “*Energy Loss, Thermal Transport, and Particle Survival in Low-density Collectors*”, in prep.

Invited Talks & Workshops

G. Domínguez, NASA-NSF S-Mass Independent Fractionation Workshop, *Invited Keynote Speaker, Alexandria, Virginia, June 13, 2011*

G. Domínguez, *Diffusion and Isotopic Fractionation in High Temperature Silicate Melts*, Cal State University San Marcos, March 2011.

G. Domínguez, *Non-Equilibrium Isotope Effects in Atmospheric Chemistry, Cosmochemistry, and Geochemistry*, University of Chicago, Department of the Geophysical Sciences, April 13, 2011.

- G. Dominguez**, *Photochemical processing of oxygen species on 10 K dust grain surfaces: First experimental results and implications for the distribution of oxygen in the Solar System*, Timber Cove III, Astronomy, Cosmochemistry and Astromaterials Science, Timber Cove, California, February 5, 2011.
- G. Dominguez**, *Beating the Diffraction Limit with Infrared Nanoscopy: A New Tool for Sample Analysis and Characterization*, Timber Cove III, Astronomy, Cosmochemistry and Astromaterials Science, Timber Cove, California, February 5, 2011.
- G. Dominguez**, *A Unified Theory of Diffusion and Isotopic Fractionation in High Temperature Silicate Melts*, **University of California, Los Angeles**, Earth and Space Sciences Department, January 2011.
- G. Dominguez**, *Climate Change, Quantum Mechanics, and Isotopes*, **Claremont McKenna College**, Joint Science Department, December 2010.
- G. Dominguez**, *Comets, Atmospheric Chemistry and the Solar System: An Isotopic Perspective*, Institute of the Americas Camp Ciencia, **University of California, San Diego**, August 2010.
- G. Dominguez**, *Isotope Studies in Natural Systems and Their Applications*, **Harvey Mudd College**, Physics Dept., March 2010.
- G. Dominguez**, *Quantifying the impact of primary sulfate from marine vessels using triple-isotope measurements of oxygen in aerosol sulfate*, **Gordon Research Conference-Isotopes In Biological and Chemical Sciences**, Ventura, CA, February 2008.
- G. Dominguez**, *Reconstructing the Formation of the Solar System From the Analysis of Extraterrestrial Samples in the Lab*, astrophysics seminar, **University of California, Irvine**, November 2007.
- NASA's Planetary Science Summer School (invited)**, Jet Propulsion Laboratory, Pasadena, Summer 2006.

Presentations (selected)

39. **G. Dominguez**, *Photochemical processing of oxygen species on 10 K dust grain surfaces: First experimental results and implications for the distribution of oxygen in the Solar System*, Timber Cove III, Astronomy, Cosmochemistry and Astromaterials Science, Timber Cove, California, February 5, 2011.
38. **G. Dominguez**, *Beating the Diffraction Limit with Infrared Nanoscopy: A New Tool for Sample Analysis and Characterization*, Timber Cove III, Astronomy, Cosmochemistry and Astromaterials Science, Timber Cove, California, February 5, 2011.
37. J. C. Hill-Falkenthal, A. Pandey, E. Coupal, S. D. Kim, **G. Dominguez**, M. H. Thiemens, Investigating atmospheric transport processes using cosmogenic ³⁵S and oxygen isotopic anomaly ($\Delta^{17}\text{O}$) in sulfate, American Geophysical Union (AGU), San Francisco, CA, USA, December 2010.
36. **Dominguez, G.**, Wilkins, G., and Thiemens, M., *Unified Theory of Soret Diffusion and Isotopic Fractionation of Elements in Silicate Melts*. American Geophysical Union (AGU), San Francisco, CA, USA, December 2010.
35. **Dominguez, G.**, *Heterogeneous Chemistry and the Mass Independent Distribution of Oxygen Isotopes in the Parent Molecular Cloud and Solar System*, Meteoritical Society Meeting, New York, NY, USA, July 2010.

34. **Dominguez, G.**, Andreev, G., Gainsforth, Z., Westphal, A. J., Basov, D., Thiemeis, M.H., *Infrared Spectral Nanoscopy: A New Tool for the Characterization of Planetary Materials*, Meteoritical Society Meeting, New York, NY, USA, July 2010.
33. **Dominguez, G.**, Wilkins, G., and Thiemeis, M., *A Fundamental Approach to Isotopic Fractionations Induced By Thermal Gradients in Melts*. Goldschmidt Conference, Knoxville, Tenn., USA, June 2010.
32. **Dominguez, G.**, *A Heterogeneous Chemical Origin for ^{16}O Enriched and ^{16}O Depleted Reservoirs in the Early Solar System*, Lunar and Planetary Science Conference, March 1-5, 2010, Woodlands, Texas (talk).
31. Andreev, G. O., **Dominguez, G.**, Thiemeis, M., Keilmann, F., Basov, D. N., *Nanoscale resolved infrared spectra of a thermal oxide using s-SNOM and QC lasers*, SPIE Optics-Photonics, San Diego, USA 2009 (talk).
29. **Dominguez, G.**, Wilkins, G., and Thiemeis, M., *Modeling of Elemental Isotopic Fractionations Induced By Thermal Gradients in Melts*. American Geophysical Union Meeting, San Francisco, CA, USA 2009 (poster).
28. **Dominguez, G.**; Wilkins, G., *Temperatures and Time Evolution of Hypervelocity Impact Generated Tracks in Aerogel*, Lunar and Planetary Science Conference, March 23-29, 2009, Woodlands, Texas, USA.(poster).
27. Chakraborty, S.; Ahmed, M.; **Dominguez, G.**; Thiemeis, M. H., *Oxygen Isotopic Fractionation in Vacuum Ultraviolet Photodissociation of CO: Lack of Self-shielding and Relevance to the Early Solar System*, Lunar and Planetary Science Conference, March 23-29, 2009, Woodlands, Texas, USA. (talk).
26. Pandey, A., **Dominguez, G.**; Thiemeis, M. H., *Understanding the tropospheric residence time and transport of SO_2 and SO_4 using cosmogenic ^{35}S and oxygen anomaly ($\Delta^{17}\text{O}$)*, American Geophysical Union Meeting, San Francisco, CA, USA 2009 (talk).
25. Shaheen, R.; Horn, J.; **Dominguez, G.**; Masterson, A.; Ivanov, A. V.; Thiemeis, M. H., *Triple Isotopic Composition of Atmospheric Carbonates: A Novel Technique to Identify Heterogeneous Chemistry on Aerosol Surfaces in Polluted Environment*, American Geophysical Union Meeting, San Francisco, CA, USA 2009 (talk).
24. **Dominguez, G.**, Jackson, T., Brothers, L., Barnett, B., Nguyen, B., Thiemeis, M.H., *Quantifying the amount of primary ship sulfate in a polluted maritime environment using triple-oxygen isotopic measurements of sulfate*, American Geophysical Union Meeting, San Francisco, CA, USA 2008 (Poster).
23. Brothers, L., **Dominguez, G.**, Fabian, P., Thiemeis, M.H., *Using Multi-Isotope Tracer Methods to Understand the Sources of Nitrate in Aerosols, Fog and River Water in Podocarpus National Forest, Ecuador*, American Geophysical Union Meeting, San Francisco, CA, USA 2008. (Poster).
22. Shaheen, R., Abramian, A, **Dominguez, G.**, Jackson, T., Thiemeis, M.H., *Oxygen Isotope Anomaly in the Carbonate Fractions of Aerosols and its Potential Use to Assess Urban Pollution*, American Geophysical Union Meeting, San Francisco, CA, USA 2008. (Oral).
21. **Dominguez, G.**, *Timescales for the Evolution and Heating of Impact Tracks in Aerogel*, Timber Cove II-Stardust Workshop, October 2008 (Poster).
20. **Dominguez, G.**, *Timescales for the Evolution and Heating of Impact Tracks in Aerogel*, Committees on Space Research 2008 Meeting, Montreal, Quebec, Canada 2008 (Oral).
19. **Dominguez, G.**, Wilkins, G., Jackson, T., Brothers, L., McCabe J., Thiemeis, M.H., *Evaluation Of Sensitivity Of Mass-independent Oxygen Isotopes In Aerosol Nitrate To*

Environmental Factors Using A Photochemical Box Model, American Geophysical Union Meeting, San Francisco, CA, USA 2007 (Poster).

18. Thiemens, M.H., Jackson, T., Barnett, B., Nguyen, B., Corbin, A., Prospero, J.M., **Dominguez, G.**, *Quantifying the influence of particulate sulfate in a variety of marine environments: from coastal California to the tropical Atlantic*, American Geophysical Union Meeting, San Francisco, CA, USA 2007 (Poster).
17. Brothers, L.A., **Dominguez, G.**, Bluen, B., Corbin, A., Abramian, A., Thiemens, M.H., *Measuring ³⁵S of Aerosol Sulfate: Techniques and First Results*, American Geophysical Union Meeting, San Francisco, CA, USA 2007. (Oral)
16. **Dominguez, G.**, Trigo-Rodriguez, J. M., Burchell, M. J., Horz, F., Llorca, J., Tsou, P., Anderson, W., *Analysis of Factors Contributing to the Bulbous Capture Tracks from Cometary Dust Particles in Stardust Aerogel Collector*, Meteoritical Society Meeting, Tucson, AZ, USA, August 2007 (Oral).
15. **Dominguez, G.**, Jackson, T., Nguyen, B., Barnett, B., Thiemens, M., *Towards Quantifying the Contribution of Ship Emissions to the Aerosol Environment in San Diego Using multi-Oxygen Isotopic Analysis of Aerosol Nitrate*, American Geophysical Union Meeting, San Francisco, CA, USA 2006 (Oral).
14. Dawson, Olivia R.; Strong, S.; Likar, J.; Watson, A.; Balint, T.; Aubrey, A.; Bramall, N.; Chereck, A.; **Dominguez, G.**; Hultgren, E.; Levy, J.; Liu, T.; Elwood Madden, M.; Plesko, C.; Sigel, D.; Soderlund, K.; Takahashi, Y.; Thompson, S.; Thomson, B.; Wiese, D., *Comparative Planetology at Saturn: Mission Concept for a Flyby with Shallow Probes*, American Astronomical Society, DPS meeting #38, #45.21, 2006 (Poster).
13. **Dominguez, G.**, Westphal, A. J.; Jones, S. M.; Phillips, M. L. F.; Schrier, M., *Calorimetric Aerogel Performance and Interstellar Dust Velocities*, Dust in Planetary Systems: Proceedings of the conference held September 26-28, 2005 in Kaua'i, Hawaii. LPI Contribution No. 1280, p.39. (Poster).
12. **Dominguez, G.**; Westphal, A. J.; Phillips, M. L. F.; Jones, S. M.; Graham, G. A.; Kearsley, A. T.; Drolshagen, G., *Passive Detector Technology for the Capture of Micrometeoroids and Orbital Debris: Calorimetric Aerogels*, 4th European Conference on Space Debris, 18-20 April 2005, ESA/ESOC, Darmstadt, Germany. (Oral).
11. **Dominguez, G.**, Westphal, A. J., *Modeling Large Interstellar Dust Grain Impacts in Sample Return Missions*, 38th Lunar and Planetary Science Conference, March 14-18, 2005, in League City, Texas. (Poster)
10. Westphal, A. J.; Butterworth, A. L.; Snead, C. J.; **Dominguez, G.**; Weber, P. K.; Hutcheon, I. D.; Huss, G. R.; Nguyen, C. V.; Graham, G. A.; Ryerson, F.; Bradley, J. P., *Technique for Concentration of Carbonaceous Material from Aerogel Collectors Using HF-Vapor Etching*, 35th Lunar and Planetary Science Conference, March 15-19, 2004, League City, Texas (Poster)
9. **Domínguez, G.**; Westphal, A. J.; Jones, S. M.; Phillips, M. L. F., *Hypervelocity Impact Energy Loss and Track Shape in Aerogels: Theory and Experiment*, 35th Lunar and Planetary Science Conference, March 15-19, 2004, League City, Texas (Poster)
8. **Domínguez, G.**, et al., *Calorimetric Aerogel Collectors/Detectors of Hypervelocity Dust Grains*, Committees On SPace Research (COSPAR) 2004, Paris, France. (Poster).
7. **Domínguez, G.**, et al., *A Theory of Impact Cratering in Low Density Solids and Application to Aerogels*. Eos Trans. AGU, 84(46), Fall Meet. Suppl., Abstract P52A-0478, 2003 (Poster).

6. **Domínguez, G.** et al., Fluorescent Aerogels for Capture and Identification of Interplanetary and Interstellar Dust. 34th Lunar and Planetary Science Conference, March 17-21, 2003, League City, TX. USA (Poster).
5. Westphal, A. J.; Graham, G. A.; Bench, G.; Brennan, S.; Luening, K.; Pianetta, P.; Keller, L. P.; Flynn, G. J.; Snead, C.; **Domínguez, G.**; Grant, P.; Bajt, S.; Bradley, J. P.; Butterworth, A. L., *Robust Extraction and Multi-Technique Analysis of Micrometeoroids Captured in Low Earth Orbit*, Workshop on Cometary Dust in Astrophysics, August 10-15, 2003, Crystal Mountain, Washington.
4. Snead, C.; Westphal, A. J.; **Domínguez, G.**; Zolensky, M. E., *Successful Capture, Extraction and Identification of Hypervelocity CM2 Meteorite Fragments Shot by Light-Gas Gun*, 34th Annual Lunar and Planetary Science Conference, March 17-21, 2003, League City, Texas.
3. Westphal, A. J.; Snead, C.; **Domínguez, G.**; Bradley, J. P.; Zolensky, M. E.; Flynn, G.; Brownlee, D., *An Extraction and Curation Technique for Particles Captured in Aerogel Collectors*, 34th Annual Lunar and Planetary Science Conference, March 17-21, 2003, League City, Texas
2. Flynn, G. J.; Lanzirotti, A.; Westphal, A. J.; **Domínguez, G.**; Snead, C., *Chemical and Mineralogical Analysis of an Extraterrestrial Particle in Aerogel*, 34th Annual Lunar and Planetary Science Conference, March 17-21, 2003, League City, Texas
1. **Domínguez, G.**, et al., *Fluorescence Properties of Thermally-Activated Alumina Aerogels*, Committees On SPACe Research (COSPAR) 2002, Houston, TX. USA (Oral).

Professional Workshops Attended

NASA's Planetary Science Summer School (invited), Jet Propulsion Laboratory, Pasadena, Summer 2006.

Teaching Experience

Graduate Student Instructor: Physics for Scientists and Engineers (Electricity and Magnetism - Fall 2000), Dept. of Physics at UC Berkeley. Led 2 hour long discussion sections. Duties included presenting new material to students, leading discussion of physics problems, and encouraging student dialogue. Grading of exams also included.

Graduate Student Mentor: Ronald E. McNair Scholars Program (Spring 2000). Assisted motivated undergraduates with undergraduate research, writing, and presentation. Weekly duties included providing informal guidance on the graduate school application process as well as tips for taking the math portion of the GRE.

Graduate Student Instructor: Advanced Physics Laboratory (Fall 1998 & Spring 1999), Dept. of Physics at UC Berkeley. Assisted advanced undergraduates with their experiments. Quizzed students on concepts in a wide variety of experiments (holography, Compton Scattering, X-ray diffraction, atomic spectra, particle physics, and NMR). Duties also included grading of technical write-ups of experimental data.

Undergraduate Student Instructor: Physics for Scientists and Engineers (Mechanics), Physics Scholars Program at U.C. Berkeley (Fall 1997). Co-led 2 hour long problem solving sessions with students. Duties included giving mini-lectures, creating interesting physics problems and writing up their solutions.

Student Mentoring

Actively engaged in providing technical/mathematical assistance and developing modeling tools for graduate students in the UCSD Stable Isotopes Laboratory.

Graduate Students Mentored (UCSD): Ryan Davis (2008-present), Justin McCabe, Ph.D., Lauren Brothers, A.B.D., and Anthony Fry, M.A.

Undergraduate Students Mentored (UCSD): Bryan Nguyen (2005-2007), Burt Barnett (2005-2007), Gautam Wilkins (2007-2010), Antoinette Corbin (2007-2008), and Anna Abramian (2007-2008). These students have presented their results at national research conferences.

Graduate Student Mentor (UC Berkeley-1999): Ronald E. McNair Scholar's Program. Helped undergraduates with research, writing, and presentation of results for an undergraduate research journal. Weekly duties included guidance on the graduate school applications, balancing research and classes, and organizing weekly research meetings. In addition, prepared workshop on strategies for taking the Math portion of the GRE.

Professional Service

NSF, Geochemistry, external reviewer (2011).

NASA-Origins Program, proposal review panel (2009).

NASA-Origins Program, external reviewer (2010).

Reviewer: *Earth, Moon, and Planets* (2007); Journal of Chemical Education (2009); Analytical Chemistry (2010); Meteoritics and Planetary Science (2010); *Geochemica et Cosmochimica Acta* (2011)

Oral Presentations Judge; Mentor, Society for the Advancement of Chicanos and Native Americans in Science (SACNAS) National Meeting, Salt Lake City, UT, 2008.

Dwornik Student Award Judge, Lunar and Planetary Science Conference, Houston, 2011.

Chair, *Meteoritics and Planetary Science Conference*; Tucson, AZ, 2007.

Chair, *Third International Symposium on Isotopomers*, La Jolla, CA 2006.

Professional Memberships

American Association for the Advancement of Science (AAAS), member (2002-)

American Geophysical Union, member (2003-)

Geochemical Society, member (2010-

Meteoritical Society, member (2011-

Committees On Space Research, member and associate (2008-present)

Society for the Advancement of Chicanos and Native Americans in Science (SACNAS), member

Other Activities

Mentor for the American Chemical Society's Project SEED (summer 2009).

Mentor for California Alliance for Minority Participation (CAMP) undergraduate researcher in the Stable Isotopes Laboratory during summer of 2007 – 2008.

Rockets and Forces: Presentation to preschool kids on laws of nature. Demonstrated baking soda/vinegar rocket to two preschool classrooms followed by question and answer session.

Visited an Oakland elementary school classroom and talked to students about careers in science. Demonstration with liquid nitrogen was included. (1997).

Computer/Language Skills: Proficient in Unix/Linux Operating System, including the use of shell scripts for task automation and creative data acquisition; Matlab (including Data Acquisition Toolbox), C, and some Fortran experience.

Languages: Fluent in English and Spanish (oral and written)