Brandon R. Brown, Ph.D.

Coordinates:

2130 Fulton St.
Department of Physics and Astronomy
University of San Francisco
San Francisco, CA 94117

email: brownb@usfca.edu
phone: 415 422-6179

Education:

1998:	Post-doctoral Certificate in Science Communication, U.C., Santa Cruz, CA.
1997:	Ph.D. in Solid State Physics, Oregon State University, Corvallis, OR.
1992:	BA in Physics (*Magna cum Laude*), Rice University, Houston, TX.

Employment:

2010-present:	Professor of Physics & Astronomy, USF. Director of External Affairs, Arts and Sciences.
2008-2010:	Associate Professor of Physics, USF. Director of External Affairs, Arts and Sciences
2004-2008:	Associate Dean for Sciences and Associate Professor of Physics, USF.
1998-2004:	Assistant Professor of Physics, University of San Francisco.
1997-1998:	Content expert, Archipelago Productions, Monterey, CA. Designed multi-media lectures for Physics CD-ROM.

Teaching:

1998-2011:	University of San Francisco – 43 lecture and laboratory sections total, spanning twelve different courses within the physics major and non-major offerings. Aggregate SUMMA average for "overall I rate this instructor a good teacher": 4.7 out of 5.0. Three tenure and promotion committees unanimously rated teaching as "superior."

Research Publications:

"Temperature Sensitivity in Electrosensors and Thermal Voltages in Electrolytes." B. R. Brown, *J. Biol. Phys.* 36, 121-134 (2010).

"Corrigendum: Sensing Temperature without Ion Channels." B. R. Brown, *Nature* 454, 246 (2008).

"From Morphology to Neural Information: the Electric Sense of the Skate," M. Camperi, T. Tricas, B. R. Brown, , *PLoS, Computational Biology* **3**, 1083-1096 (2007).

"Infrastructure in the Electric Sense: Admittance Data from Shark Hydrogels." B. R. Brown, M. E. Hughes, and C. Russo, *Journal of Comparative Physiology A*, 191, 115-123 (2005).

"Thermoelectricity in a Polymer Hydrogel." B. R. Brown, M. E. Hughes, and C. Russo, *Physical Review E*, 70, 031917 (2004).

"Sensing Temperature without Ion Channels." B. R. Brown, *Nature* 421, 495 (2003).

"Extracellular signal fluctuations in shark electrosensors," (refereed proceedings) B. R. Brown. M.E. Hughes, J. C. Hutchison, in *Fluctuations and Noise in Biological, Biophysical, and Biomedical Systems*. SPIE Series, Volume 5110, Bellingham, WA, (2003).

"Modelling an Electrosensory Landscape: Behavioral and Morphological Optimization in Elasmobranch Prey Capture." B. R. Brown, *Journal of Exp. Biology* 205, 999-1007 (2002).

"Electrical Characterization of Gel Collected from Shark Electrosensors." B. R. Brown, J. C. Hutchison, M. E. Hughes, R. W. Murray, and D. R. Kellogg, *Phys. Rev. E* 65, 061903 (2002).

"Simulation of dc resistivity data: Questioning critical scaling for the high-Tc copper-oxides." B. R. Brown, *Physical Review B*, 61, pp 3267-3269 (2000).

"Neutron-irradiation effects of the *V-I* characteristics of YBaCuO twinned crystals: Linking transport results in a variety of copper oxide superconductors." B. Brown, J. M. Roberts, J. Tate, and J. Farmer, *Phys. Rev. B. Rapid Communication*, 55, 8713R (1997).

"Scaling of thin-film NdCeCuO resistivity-current isotherms at low fields: Implications for vortex phase transitions and universality." J. M. Roberts, B. Brown, J. Tate, X. X. Xi, and S. N. Mao, *Phys. Rev. B.* 51, 15281 (1995).

"Scaling of voltage-current characteristics of thin-film YBaCuO at low magnetic fields." J. M. Roberts, B. Brown, B. A. Hermann, and J. Tate, *Phys. Rev. B.* 49, 6890 (1994).

Grants and Awards

USF Distinguished Research Award (2010.)

Fletcher Jones Foundation. "The Fletcher Jones Advanced Instrument Corridor." Co-author with R. Power and S. Dalton. $300,000 (2009).

DOE Congressional earmark. PI, "The University of San Francisco Paper Study, Science Building" $479,000 (2006-2008).

HUD Congressional earmark. PI, "Integrated Science Center." $397,000 (2008-2011).

William Randolph Hearst Foundation. Co-author. "Construction of the Integrated Science Center." $150,000 (2007).

NASA Congressional earmark. PI, "USF Center for Science and the Environment." $920,000 (2005-2009).

NASA Congressional earmark. PI, "Laboratory Equipment for Science Center Upgrades." $928,000 (2006-2009).

FIPSE Congressional earmark. PI, "Equipment for Harney Science Center." $570,400 (2005-2007).

Herbst Foundation. Proposal co-author. "The Herbst Mathematics Classroom." $250,000 (2006).

Wayne and Gladys Valley Foundation. Co-author with S. Dalton, D. Macmillan, *et al.,* "Challenge grant – USF's Integrated Science Center." $5,000,000 (2006-present).

Fletcher Jones Foundation. "The Fletcher Jones Laboratory, a naming grant for the Center for Science and Innovation." Co-author with L. Margerum and S. Dalton. $500,000 (2005).

DOE Congressional earmark. PI, "USF Integrated Science Center." $497,000 (2005-2008).

DARPA. Co-PI with PI Tricas (U. Hawaii) and co-PI Camperi. "Neurosensory Control of Locomotor Movements in Free-Swimming Sharks." $500,000 (2004-2006).

Arthur Furst Award, recognizing distinguished research for the betterment of humankind. USF (Spring, 2004).

National Science Foundation. Major Research Instrumentation grant, Division of Chemistry. **Co-PI** with PI Margerum and co-PI Curtis. $40,000 (2002-2005).

Fletcher Jones Foundation. Departmental grant for the "Materials Physics" initiative. Lead author. $790,000 (2000-2007).

National Science Foundation. Course Curriculum and Laboratory Improvement grant, Division of Undergraduate Education. **PI** with co-PI Holliday. $80,000 (2001-2003).

Selected Talks and Colloquia:

"Mechanisms of the Magnetic Sense." USF Neuroscience Colloquium Series. October 28, 2008.

"How do organisms sense the Earth's magnetic field?" invited talk. San Francisco State Physics and Astronomy Colloquium Series. September 29, 2008.

"How do organisms sense the Earth's magnetic field?" USF Physics Colloquium Series. April 2, 2008.

"The role of canals in the elasmobranch electric sense." Invited talk. *Electric Fish* satellite meeting for the International Conference of Neuroethology. Vancouver, Canada. July 21, 2007.

"So Sensitive: Hydrogel Properties and Shark Neuroscience." invited talk. *American Chemical Society Meeting.* Palo Alto, California. March 25, 2005.

"Bimodal Sensory System in the Shark?" invited talk. *West Coast Nerve Net*. Santa Clara, California. July 10, 2004.

"Extracellular Signal Processing in Electrosensors," B. R. Brown, *Complex Dynamical Processes in Electroreceptors and Hair Cells*, invited speaker. Dresden, Germany. May 17, 2004.

"The sixth sense of sharks," invited talk, University of Marbug Physiologie Seminar. Marburg, Germany. May 15, 2004.

"Extracellular Signal Processing in Electrosensors," B. R. Brown, *Complex Dynamical Processes in Electroreceptors and Hair Cells*, invited speaker. May 17 in Dresden, Germany.

"The sixth sense of sharks," invited talk, University of Marbug Physiologie Seminar. Marburg, Germany. May 15, 2004.

"Thermoelectricity and the Sensory World of Sharks," B. R. Brown, invited lecture. Santa Clara University Department of Physics Colloquium Series. October 27, 2003.

"Extracellular signal fluctuations in shark electrosensors," B. R. Brown. *Fluctuations and Noise 2003*, invited talk, Santa Fe, NM. June 2, 2003.

"Hydrogels and the Sixth Sense of Sharks," B. R. Brown, invited lecture. Rice University Department of Physics Colloquium Series. November 12, 2003, in Houston, TX.

"Thermoelectricity and Extracellular Signal Transduction," B. R. Brown. *2003 March Meeting of the American Physical Society*, contributed talk, Austin, TX.

"Dielectric Properties of Gel Collected from Shark Electrosensors," M. E. Hughes, J. C. Hutchison, B. R. Brown, R. W. Murray. *2003 March Meeting of the American Physical Soc.*, poster, Austin, TX.

"The Physics of a Shark's Electric Sense," B. R. Brown, invited lecture. San Francisco State Department of Physics Colloquium Series. March 18, 2002.

"Extracellular Signal Development in the Electrosensors of Elasmobranchs," B. R. Brown, invited lecture at the Center for Neurodynamics and the Univ. of Missouri, St. Louis. October 12, 2001.

"Electrical Resistivity of an Elasmobranch's Ampullary Jelly in Varying Electric and Magnetic Fields," B. R. Brown, M. E. Hughes, *2001 March Meeting of the American Physical Society*, Seattle, WA.

Selected Publications for More General Audiences:

"Reading and Writing About a Laboratory," Brandon Brown, in *The World is a Text*, *3rd Edition*. (eds J. Silverman and D. Rader), Prentice Hall, (2009).

"Rebuild the House of Science," Brandon Brown, *SEED Magazine*, 2006 Science Policy Essay grand prize winner. (November, 2006).

"A Theory for Stretchiness," Brandon Brown, *Physical Review Focus*, (September 7, 2000).

"New Info from Slow Muons," Brandon Brown, *Physical Review Focus*, (May 15, 2000).

"Herding Molecules", Brandon Brown, *Physical Review Focus*, (March 10, 2000).

"Cooking with Qubits", (feature article detailing the latest advances in quantum information processing), Brandon Brown, *New Scientist*, pp 38-41. (August 28, 1999).

"That's Me in the Middle," (feature article covering "telerobotic presence" innovations), Brandon Brown, *New Scientist*, Sept. 26, pp. 30-31, (1998).

Selected Media Appearances:

"Perfect Predators." Work and interview included in shark sense documentary for both the *Discovery* channel and *Animal Planet.* (August, 2007, and annually on "Shark Week.").

KCBS, 740 AM. Interviewed on local radio to discuss the relevance of our work to understanding a fatal shark attack in Morro Bay (August, 2003).

National Public Radio. Interviewed on "All Things Considered," concerning our research (2003).

BBC radio. Interviewed on "Science in Action," concerning our research (2003).

Alaska Public Radio. Interviewed on "Fishing Report," concerning our research (2003).

Duetschlandfunk(German Public Radio). Interviewed concerning our research (2003).

California Academy of Sciences. Museum exhibit devoted to our research work (2003).

New York Times, Scientific American, Boston Globe, Financial Times, Chemical and Engineering News, Science News, Xinhua News Agency (China), Agence France-Presse (Paris), Financial Times, et alia. Various periodicals and news wires ran short pieces, some carrying photos and quotations, concerning a biophysics discovery made in our research laboratory at USF. (early February, 2003).

News Day. Feature article concerning our investigation of gel collected from sharks, including photos and quotations. (July 16, 2002).

Science Update. Interviewed for the national radio program of the American Association for the Advancement of Science. (June, 2002).