Douglas W. White
E-mail: douglasw@usca.edu

Teaching Experience:

2024-present — Associate Professor of Physics at USC Aiken
- Introductory calculus-based physics courses and labs

2017-2024 — Assistant Professor of Physics at USC Aiken
- Introductory calculus-based physics courses and labs
- Introductory algebra-based physics labs and physical science labs (PHYS A201/202L and PHYS A101L)
- Introduction to Chemistry (CHEM A101) labs
- Astronomical viewing events: Solar Eclipse (2017), Mercury transit (2019), Lunar Eclipse (2022)

2013-2017 — Adjunct/Visiting Professor of Physics at Jacksonville State University
- Introductory algebra-based physics labs and courses
- Introduction to Quantum Mechanics (PHS 491)
- Classical Mechanics (PHS 303)
- Introductory Astronomy
- Astronomy Viewing events (e.g., Mercury transit 2016)
- Jacksonville River Monitors (water quality testing)

2011-2012 — Mentoring undergraduate and graduate research participants at NASA Ames Research Center,
Yuri's Day (educational outreach day for school children) volunteer at NASA-ARC

2002-2010 — Graduate Assistant/Instructor at UAB
- Introductory astronomy labs
- Introductory physics labs, recitation sections
- Lab coordinator for astronomy, training graduate student instructors

2009 — Hosted 100 Hours of Astronomy in support of the 2009 International Year of Astronomy on the nights of April 2-5 at UAB

2000-2002 — Teaching Assistant at NGCSU
- Introductory physics labs
- Introductory astronomy labs, Telescope operator at NGAO

Research Experience:

2024-present — Associate Professor of Physics at USC Aiken
Laboratory analogs of thermally-processed interstellar and planetary ices

2017-2024 — Assistant Professor of Physics at USC Aiken
Laboratory analogs of thermally-processed interstellar and planetary ices

2011-2013	Postdoctoral Fellow, NASA Ames Research Center • Laboratory analogs of thermally and UV-processed N_2-rich ices relevant to observations from the surface of Pluto in support of the New Horizons mission Dr. Scott Sandford, Dr. Dale Cruikshank, Dr. Rachel Mastrapa, Supervisors • Laboratory studies of NH_3- and CO_2-containing planetary and interstellar ice analogs, Dr. Scott Sandford, Dr. Rachel Mastrapa, Supervisors
2005-2010	Graduate Assistant Laboratory Studies of CO_2 Interstellar Ice Analogs Subject to Thermal Processing, UAB Astrophysics Laboratory Dr. Perry Gerakines, Advisor
2003-2005	Graduate Assistant High pressure studies of polymers, UAB Materials Physics Energy-dispersive x-ray diffraction analysis of materials at NSLS in Brookhaven National Laboratory Dr. Yogesh K. Vohra, Advisor
2002-2003	Graduate Assistant Homoepitaxial single crystal diamond growth for use in designer diamond anvils for high-pressure experiments, UAB Materials Physics Dr. Yogesh K. Vohra, Advisor
2001-2002	Studies of radioactive elements and neutron activation, North Georgia College & State University (NGCSU) undergraduate nuclear physics laboratory Dr. Richard Prior and Dr. Mark Spraker, NGCSU
2000-2002	Student Assistant, North Georgia Astronomical Observatory (NGAO) Planet transit observation (HD209458), Color-Magnitude diagrams of star clusters (NGC2362) Dr. Joseph Jones, NGCSU
6/2001-8/2001	REU participant in chemical vapor deposition (CVD) of large, single crystal homoepitaxial diamonds Dr. Yogesh K. Vohra, Dr. Chih-Shuie Yan, UAB, Mentors

Education:

2010	PhD in Physics from UAB, Birmingham, AL Dr. Perry Gerakines, advisor
2007	M.S. in Physics from UAB, Birmingham, AL Dr. Perry Gerakines, advisor
2002	B.S. in Physics from NGCSU, Dahlonega, GA Dr. Mark Spraker, undergraduate advisor

Special Skills:

Operation of a 16" Cassegrain telescope with a CCD camera for undergraduate research and astronomy labs. Use of a multi-channel analyzer with a NaI detector for analyzing radioactive decay of daughter elements of Uranium and irradiation experiments with ^{239}Pu. Laboratory experience with 1.2 kW and 6 kW Microwave Plasma Chemical Vapor Deposition (MPCVD) systems for single-crystal diamond growth. Use of Raman Spectroscopy and x-ray diffraction in analysis of high-pressure materials and thin films. Operation of an x-ray analysis station at Brookhaven National Laboratory.
Use of vacuum systems and operation of a closed-cycle He cryostat and FTIR spectrometer to analyze laboratory ice analogs. Operation of a quadrupole mass spectrometer in temperature programmed desorption of interstellar ices in the laboratory with a high-vacuum system, as well as some experience with LabView. Laboratory astrophysics, astrochemistry, and planetary science. Use of Origin, IGOR, SciDAVis, and Excel software for graphical analysis as well as MS Word and LaTeX for documentation.

Awards/Honors:

University Service Award Nominee (2024)
Outstanding Graduate Student (2010)
Dean's Research Award (2010)
Alabama Space Grant Consortium fellow (2008-2010)
Graduate Student Association Senator (Fall 2007-Spring 2009)
Outstanding Undergraduate in Physics (2002) from NGCSU
Sigma Pi Sigma (2001)

Awarded Grants:

ASPIRE I ($15,000), Advanced Support for Innovative Research Excellence (Track-I), *University of South Carolina, Office of the Vice President for Research.* Laboratory Studies of Outer Planetary Ice Analogs Subject to Thermal Processing; July 2019 – December 2021 (Extension granted due to pandemic).

Magellan Scholar Award ($5000), *University of South Carolina, Office of Undergraduate Research* (Thomas M. Burgess, student), Laboratory Analogs of Interstellar and Planetary Ice Mixtures; January – May 2019, August – December 2019.

Department/School Committees Served

Department committee revamping BS degrees in Chemistry (2023-present)
Faculty Search Committee (AY22-23, AY19-20)
Dean for the College of Science and Engineering search committee (Spring 2020)
Department Assessment Committee (2018-present)

University Committees Served

General Education Committee (2020-2023)
- Co-chair (AY21-22 – AY22-23)
Family Fund Organizer for Department of Chemistry and Physics (2019-2021)
University Service Awards Committee (Spring 2020)
Moderator for Scholar Showcase (Spring 2019)

Professional Memberships:

Astrochemistry Division (ACS) (2020-present)
American Chemical Society (2020-present)
Laboratory Astrophysics Division (2012-2017, 2021-present)
Division of Planetary Science (AAS) (2011-2013)
American Astronomical Society (2006-2017)
American Physical Society (2003-2006, 2020-2022)
Society of Physics Students (1997-2002)

Publications:

White, D. W. "Laboratory Analogs of Thermally Processed Ices Containing H_2O, N_2, NH_3, CO_2, and C_2H_3N Relevant to Astrophysical Environments." In press 2024, Current Physics.

White, D. W. "Building an astrophysics/astrochemistry laboratory from scratch." 2022, The Physics Teacher, 60, 362.

Materese, C. K., Cruikshank, D. P., Sandford, S. A., Imanaka, H., Nuevo, M., **White, D. W.** "Ice Chemistry on Outer Solar System Bodies: Carboxylic acids, Nitriles, and Urea Detected in Refractory Residues Produced from the UV-photolysis of N_2:CH_4:CO Containing Ices." 2014, ApJ, 788, 111

White, D. W., Mastrapa, R. M. E., and Sandford, S. A. "Laboratory Spectra of CO_2 Vibrational Modes in Planetary Ice Analogs." 2012, Icarus, 221, 1032

Cook, A. M., Whittet, D. C. B., Shenoy, S. S., Gerakines., P. A., **White, D. W**., and Chiar, J. E. "The Thermal Evolution of Ices in the Environments of Newly Formed Stars: The CO_2 Diagnostic." 2011, ApJ, 730, 124

White, D. W., Gerakines, P. A., Cook, A. M., and Whittet, D. C. B. "Laboratory Spectra of the CO_2 Bending-Mode Feature in Interstellar Ice Analogs Subject to Thermal Processing." 2009, ApJS, 180, 182

White, D. W., Yan, Chih-Shuie, and Vohra, Y. K. "Effect of nitrogen in the growth of a single crystal diamond by chemical vapor deposition." NCUR 2002 Proceedings.

Presentations:

White, D. W., Laboratory Analogs of Thermally Processed H_2O-rich Ices Containing NH_3 and CO_2 Relevant to Astrophysical Environments. The Magic of Spectroscopy, SERMACS meeting in Birmingham, AL. Nov. 11, 2021.

White, D. W., The Roll of Ammonium Carbamate in Trapping Carbonaceous Species on Outer Planetary Surfaces. The Chemical Physics of Molecules in Space, APS March Meeting (virtual). March 15, 2021

White, D. W., Laboratory Studies of Thermally Processed Ice Mixtures Relevant to Outer-Planetary Surfaces. SERMACS, Savannah, GA. Oct. 22, 2019.

Materese, C. K., Cruikshank, D. P., Sandford, S. A., and **White, D. W.** Radiation Chemistry on Pluto: A Laboratory Approach. New Horizons Conference, Laurel, MD. July 22-26, 2013.

Posters*:

Burgess, T. F.*, Foss, K. L.*, **White, D. W**. "Laboratory Studies of Astrochemical Ice Mixtures." Discover USC poster session, Columbia, SC., April 19, 2019.

White, D. W., Mastrapa, R. M. E., Gerakines, P. A., and Sandford, S. A. *Laboratory spectral studies of NH_3 ice mixtures relevant to astrophysical environments*. Poster presented at the 220th AAS Meeting in Anchorage, AK. June 10-14, 2012.

White, D. W., Mastrapa, R. M. E., and Sandford, S. A. *Laboratory studies of solid CO_2 in planetary and interstellar ices*. Poster presented at the 219th AAS Meeting in Austin, TX. January 8-12, 2012.

White, D. W., Mastrapa, R. M. E., and Sandford, S. A. *Laboratory studies of solid CO_2 in planetary ice analogs*. Poster presented at the joint EPSC-DPS meeting in Nantes, France. October 2-7, 2011.

Mastrapa, R. M. E., Cook, J. C., Berry, M. T., **White, D. W.**, Sandford, S. A. *Laboratory spectra of ice mixtures relevant to New Horizons observations of Pluto and TNOs*. Poster presented at the New Horizons Workshop, Flagstaff, AZ. August 30-31, 2011.

White, D. W., and Gerakines, P. A. *Laboratory Studies of CO_2 Ices Subject to Thermal Processing*. Poster presented at AAS Meeting in Long Beach, CA. January 4-8, 2009.

White, D. W., Gerakines, P. A., Cook, A. M., and Whittet, D. C. B. *Laboratory Studies of Solid CO_2 Ices in Support of Spitzer Space Telescope Observations*. Poster presented at 211th AAS Meeting in Austin, TX. January 6-11, 2008.

* Denotes undergraduate student

White, D. W., and Gerakines, P. A. *Laboratory Studies of Solid CO_2 Ices in Support of Spitzer Space Telescope Observations*. Poster presented at joint AAS/AAPT Meeting in Seattle, WA. January 4-10, 2007.

White, D. W., Vohra, Y. K., and Weir, S. T. *Electrical and optical properties of amber polyurethane at high pressures using a designer diamond anvil cell*. Poster presented at 1st annual Stockpile Stewardship Academic Alliances (SSAA) Symposium in Albuquerque, NM. March 29-31, 2004.

White, D. W., Yan, Chih-Shuie, and Vohra, Y. K. "Effect of nitrogen in the growth of a single crystal diamond by chemical vapor deposition." National Conference on Undergraduate Research (NCUR) in Whitewater, WI. April 25-27, 2002.

Personal Interests:

Bluegrass music (banjo, guitar), Budo Taijutsu, traveling, running, hiking, cooking