Al Fischer, PhD

Instrumentation Specialist
Western Carolina University
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I am the Instrumentation Specialist and an Instructor of Chemistry at Western Carolina University. My research lies at the intersection of environmental science and analytical chemistry. With expertise in chemical analysis, instrument design and automation, aerosol spectroscopy (including cavity ringdown and photoacoutic spectroscopy), atmospheric monitoring, and electron microscopy, I develop instruments and methods that help us better understand the natural world and our effects on it. I also teach classes related to chemical instrumentation and atmospheric chemistry, assist students and faculty with chemical analysis related to their research, and serve on the Environmental Science Program Council at Western.

Employment

Western Carolina University
Department of Chemistry and Physics
Cullowhee, NC
Instrumentation Specialist & Instructor (2018-Present)

University of Georgia
Department of Chemistry
Athens, GA
Research and Teaching Assistant (2012-2018)

Hummingbird Scientific
Lacey, WA
Engineering Technician (2011-2012)

Education

University of Georgia
Athens, GA
PhD, Analytical Chemistry (2018)

The Evergreen State College
Olympia, WA
BS, Environmental Chemistry (2011)

Publications

Cheng, Z., K. Atwi, O. Hajj, I. Ijeli, **D.A. Fischer**, G.D. Smith, and R. Saleh (2020) Discrepancies Between Brown Carbon Light-absorption Properties Retrieved from Online and Offline Measurements. *Aerosol Science and Technology* (in review, manuscript ID AST-MS-2020-086.R1)

Fierce, L., T.B. Onasch, C.D. Cappa, C. Mazzoleni, S. China, J. Bhandari, P. Davidovits, **D.A. Fischer**, T. Helgestad, A.T. Lambe, A.J. Sedlacek III, G.D. Smith, and L. Wolff (2020) Radiative absorption enhancements by black carbon controlled by particle-to-particle heterogeneity in composition. *PNAS*, Volume 117, No. 10, 5196-5203.

Fischer, D.A. and G.D. Smith (2018) Can ozone be used to calibrate aerosol photoacoustic spectrometers? *Atmospheric Measurement Techniques*, Volume 11, No. 12, 6419-6427.

Fischer, D.A. and G.D. Smith (2017) A 4-wavelength, Single-cell Photoacoustic Instrument for Aerosol Absorption. *Aerosol Science and Technology*, Volume 52, No. 4, 393-406.

Mattingly, K, B.D. Johnson, and **D.A. Fischer**. (2015) Characterization of Atmospheric Saharan Dust Plumes Using Remote Hyperspectral Imagery for Public Health. *Papers in Applied Geography*, Volume 1, No. 3, 286-293.

Fischer, D.A., D.H. Alsem, B. Simon, T. Prozorov, and N.J. Salmon. (2013) Development of an Integrated Platform for Cross-Correlative Imaging of Biological Specimens in Liquid using Light and Electron Microscopies. *Microscopy and Microanalysis* 19:Suppl. 2, 476–477.

Selected Proceedings

Fischer, D.A. and G.D. Smith (2017) UV-Visible Photoacoustic Spectroscopy for Aerosol Absorption. *American Association for Aerosol Research Annual Conference*, Raleigh, NC.

Renbaum-Wolff, L., **D.A. Fischer**, T. Helgestad, A. Lambe, G. Smith, C. Cappa, A.J. Sedlacek, P. Davidovits, ***T. ONASCH***, A. Freedman. (2016) Broadband Measurements of the Mass Absorption Coefficient of Soot. *American Association for Aerosol Research Annual Conference*, Portland, OR. 7CA.1.

Renbaum-Wolff, L., **D.A. Fischer**, T. Helgestad, A. Lambe, G. Smith, C. Cappa, A. Sedlacek, P. Davidovits, T. Onasch, and ***A. FREEDMAN***. (2016) Measurements of Soot Mass Absorption Coefficients from 300 to 660 nm. *European Geophysical Union General Assembly 2016*, Vienna, Austria. EGU2016-9236.

Fischer, D.A. and G.D. Smith. (2015) A UV-Vis Broadband Cavity Enhanced Spectrometer for Ambient Aerosols. *Eleventh International User Meeting and Summer School on Cavity Enhanced Spectroscopy*, Boulder, CO.

Fischer, D.A. and G.D. Smith. A UV-Vis Broadband Cavity Enhanced Spectrometer. *EPA Air Sensors 2014: A New Frontier*, Raleigh, NC, 2014.

Fischer, D.A. and G.D. Smith. (2013) Incoherent broadband cavity enhanced spectroscopy for measuring extinction coefficients of atmospheric species throughout the UV-visible spectrum. *Southeast Regional Meeting of the American Chemical Society*. Atlanta, GA.

Instruments I've Designed and Built

Click each item for more information.

- Continuous Flow Liquid Stage for Scanning Electron Microscopy
- Vapor Delivery System for SEM and TEM
- A UV-visible Broadband Cavity Enhanced Spectrometer
- An Incoherent-Coherent "Hybrid" UV-visible Photoacoustic Spectrometer
- A Single-Cell, 4-Wavelength Photoacoustic Instrument for Atmospheric Aerosols