Postdoctoral scholar position: ASCENT - Atmospheric Science and mEasurement NeTwork, FT-IR and ACSM, University of California, Davis

The Atmospheric Science and mEasurement NeTwork (ASCENT, link) is a new aerosol measurement network funded by the National Science Foundation Mid-Scale Research Infrastructure program. Leveraging existing networks, a total of 12 sites will be established across the country, providing comprehensive, high time-resolution, long-term characterization of aerosol chemical composition and physical properties. Each site will be equipped with a suite of advanced aerosol instrumentation: Aerosol Chemical Speciation Monitor (ACSM, non-refractory aerosols), Xact (trace metals), Aethalometer (black carbon), and Scanning Mobility Particle Sizer (SMPS, aerosol number size distribution and concentration). In collaboration with the National Center for Atmospheric Research (NCAR), a comprehensive database and web interface will be developed to provide research communities, educators, policy makers, and the public, with free access to all ASCENT data. ASCENT will transform atmospheric research, providing high quality, long-term aerosol characterization, the fundamental knowledge critical for long-term trend assessment, informing science-based policy decisions on climate and environmental change, including air quality, as well as for model and satellite validation. The network involves thirteen partner universities, NCAR, and various collaborations that extend to other academic, government, and industrial affiliates. Georgia Tech is the lead institution.

The Air Quality Research Center (AQRC) at the University of California, Davis is seeking a Postdoctoral Scholar to perform laboratory research using Fourier Transform-Infrared spectroscopy (FT-IR) and ACSM instrumentation to increase understanding of organic aerosols and contribute to enhanced organics data for ASCENT. The FT-IR Laboratory at the AQRC uses FT-IR and chemometric calibration methods to measure organic functional groups in filter samples to evaluate the chemical composition and sources of OA in the US (Boris et al., amt-14-4355-2021, 2021, Boris et al., amt-2019-144, 2019; Kamruzzaman et al.j.atmosenv.2017.10.053, 2018, Ruthenburg et al., j.atmosenv.2013.12.034, 2014). For ASCENT, organic functional groups will be measured from filter samples collected at all ASCENT sites for the duration of the project. Organic functional groups are complementary to ACSM data and provide additional chemically-specific OA compositional information, including aliphatic C-H, unsaturated C-H, carboxylic acids, carbonyl, non-acid carbonyl, alcohol, and amines. Using laboratory and smog chamber samples analyzed in parallel by FT-IR and ACSM, the Postdoctoral Scholar will develop parameterizations of ACSM data to increase the chemical resolution of OA from the ACSM. Similar types of empirical parameterizations have proven useful for estimating the contribution of carboxylic acid to OA measured by aerosol mass spectrometers. The parameterizations will be incorporated into the routine ACSM data analysis tools for chemical composition and source apportionment as part of the ASCENT data infrastructure.

The Postdoctoral scholar will collaborate with Dr. M. Canagaratna (Aerodyne Research Inc.) and Dr. N. L. Ng (Georgia Tech) while gaining training and fluency in FT-IR and ACSM, data management with next-generation infrastructure, and engagement with government (EPA, NPS, NSF). The post-doctoral scholar will work with undergraduate and graduate students at UC Davis and graduate students at the affiliated universities to prepare them as future mentors and STEM educators. The Postdoctoral scholar will be a

member of the ASCENT peer professional network. The involvement in such a large-scale infrastructure project will help develop skills beyond the execution of research in a single laboratory or even field setting. Every year, the post-doctoral scholar will participate in a 3-day in-person workshop at Georgia Tech together with the ASCENT leadership team, faculty site mentors, graduate students and NCAR to discuss project progress and enhance collaboration across the ASCENT team.

The initial appointment is for one year and may be extended up to three years contingent upon mutual agreement. The position includes health insurance and other benefits.

The candidate must have a Ph.D. in Atmospheric Science, Chemistry, Chemical or Environmental Engineering or a related field. A strong background in atmospheric aerosol organic chemistry (or a related field) and in Matlab, R and/or Igor command line programming are required. Knowledge and experience in operating advanced aerosol instrumentation (e.g., ACSM, AMS) and conducting field measurements are preferred. Background in the application of numerical methods, statistical learning approaches, chemometrics, machine learning, and/or FT-IR spectroscopy, are desirable. Women and minority candidates are strongly encouraged to apply. Interested individuals should send a single pdf file containing a cover letter, CV, graduate transcripts, date of availability, contact information of three references, and up to three published papers to Dr. Ann M. Dillner (amdillner at ucdavis dot edu). Applications will be accepted until the position is filled.

More information on Dr. Dillner's laboratory, the FT-IR Laboratory in the AQRC at UC Davis, is available at https://aqrc.ucdavis.edu/people/ann-dillner. The University of California, Davis, is an affirmative action/equal opportunity employer with a strong institutional commitment to the development of a climate that supports equality of opportunity and respect for differences.

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https://ng.chbe.gatech.edu/sites/default/files/ASCENT_open_positions.pdf.