Gavin McMeeking

Co-Founder

Gavin McMeeking, PhD.
Fort Collins, Colorado

970-310-5186
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Experience

RedSpire LLC / Co-founder
Jan 2025 - Present, Fort Collins, CO

Consulting services supporting clients' needs in occupational health and safety, exposure assessment, and other environmental issues.

CloudSci LLC / Co-founder & VP, Research & Development
2024 - Present, Fort Collins, CO

Climate-focused startup developing particle measurement instruments, I co-developed the business plan, spearheaded $3M in SBIR projects, conducted extensive validation experiments and customer interviews, and fostered research collaborations..

Colorado State University / Research Associate II
2022 - 2024, Fort Collins, CO

Executed a CDC-funded indoor air quality and energy efficiency project using streamlined task management. Served as the primary liaison with facility managers at 50 sites and conducted field measurements and CAD modeling.

Handix Scientific / Scientist, Senior Scientist, VP, R&D
2015 - 2022, Boulder/Fort Collins, CO

Led the commercialization of an airborne particle counter (sold over 200 units). Also led the development of other instruments, and secured $7M in SBIR funding. Expanded and managed a diverse R&D team, forged university collaborations, navigated COVID-19 disruptions, and oversaw all vendor and supplier relationships.

Colorado State University / Research Scientist I
2011 - 2012, Fort Collins, CO

Department of Atmospheric Science - Conducted an aircraft measurement campaign focused on ice nucleating particles using a custom-built instrument; presented research findings, contributed to three peer-reviewed publications; helped secure over $500,000 in funding to study ice nuclei from biomass burning.

Droplet Measurement Technologies / Scientist & Sales Specialist

2012 - 2015, Boulder, CO

Managed sales and communications for aerosol measurement products, supported global research and instrument deployments, trained international customers, contributed to publications, and aided in biological particle sensor development.

University of Manchester / Postdoctoral Research Fellow

2008 - 2011, Manchester, UK

Center for Atmospheric Science - Responsible for operation of multiple aerosol composition measurement instruments on board research aircraft, analysis of observations, and preparation of reports and publications. I also developed new methods for characterizing the properties of aerosols using laser induced incandescence.

Education

Colorado State University / PhD

2005 - 2008, Fort Collins, CO

Atmospheric Science - My work, supported in part by a DOE fellowship, focused primarily on characterizing the emissions of aerosols, including black carbon, from biomass burning during laboratory-scale burns at a US Forest Service facility. Results have been widely used in emission inventories to assess the impacts of wildfires on air quality and health.

Colorado State University / MS

2002 - 2005, Fort Collins, CO

Atmospheric Science - I analyzed observations made in Yosemite National Park to assess the impacts of wildland fire particulate emissions on visibility relevant to compliance with the Clean Air Act.

University of California, Berkeley / BA

1998 - 2002, Berkley, CA

Earth & Planetary Science

Awards & Service

Invited expert for multiple Department of Energy aerosol measurement workshops, 2020-present.

NSF invited speaker at NCAR FARE User's Workshop, 2023

AAAR Instrumentation Chair, 2019

Consultant for UC San Diego, 2017

Consultant for Korean Institute for Environmental Research, 2012

Royal Society Travel Grant Awardee, 2009

AAAS Mass Media Fellowship, 2005

Herbert Riehl Memorial Award, CSU, 2005

Reviewer for: Environmental Protection Agency, National Science Foundation, Department of Energy, National Oceanic and Atmospheric Administration, National Aeronautical and Space Administration, Netherlands Space Office, and over a dozen technical journals, 2010-present.

Select Publications

From over 70 peer-reviewed publications

ORCiD: 0000-0001-9782-3713

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Gibson, L. et al., Measurement Report: An investigation of the spatiotemporal variability of aerosol in the mountainous terrain of the Upper Colorado River Basin from SAIL-Net, EGUsphere [pre-print], 2024.

Boedicker, EK. et al., Fates and spatial variations of accumulation mode particles in multi-zone indoor environments during the HOMEChem campaign, Env. Sci. Process Impacts, 2021.

Emerson, EW. et al., Revisiting particle dry deposition and its role in radiative effect estimates, Proceedings of the National Academy of Sciences, 2020.

Mei, F. et al. Performance assessment of Portable Optical Particle Spectrometer (POPS), Sensors, 2020.

Selimovic, V. et al., Aerosol mass and optical properties, smoke influence on O3 and high NO_3 production rates in a western US city impacted by wildfires, Journal of Geophysical Research, 2020.

Li, H. et al. Development of a new correction algorithm applicable to any filter-based absorption photometer, Atmospheric Measurement Techniques, 2020.

Bi, K., et al. Measurements of ice nucleating particles in Beijing, China, Journal of Geophysical Research, 2019.

Li, H. et al., Inter-comparison of black carbon measurement methods for simulated open biomass burning emissions, Atmospheric Environment, 2019.

Selimovic, V. et al., In situ measurements of trace gases, PM, and aerosol optical properties during the 2017 NW US wildfire smoke event, Atmospheric Chemistry and Physics, 2019.

Cappa, CD. et al., Light absorption by ambient black and brown carbon and its dependence on black carbon coating state for two California, USA, cities in winter and summer, Journal of Geophysical Research, 2019.

Ditas, J. et al., Strong impact of wildfires on the abundance and aging of black carbon in the lowermost stratosphere, Proceedings of the National Academy of Sciences, 2018.

Krasowsky, T. Set al., Characterizing the evolution of physical properties and mixing state of black carbon particles: from near a major highway to the broader urban plume in Los Angeles, Atmospheric Chemistry and Physics, 2018.

Perring, A.E. et al., Airborne observations of regional variation in fluorescent aerosol across the United States, Journal of Geophysical Research, 2015.

McMeeking, G R. et al., Impacts of nonrefractory material on light absorption by aerosols emitted from biomass burning, Journal of Geophysical Research Atmospheres, 2014.

Recent Funding

Aerosol Spectral Absorption Measurement for Near UV through Near Infrared Wavelengths. Department of Defense (DOD), 2023-2025. Role: Co-Investigator. Amount: $992,428.

A Low-Cost, Networkable Fluorescence Spectrometer for Automatic Identification of Pollen and Other Coarse Mode Aerosols Found in Urban Environments. Department of Energy (DOE), 2024. Role: Principal Investigator. Amount: $255,417.

A Low-Cost Holographic Sensor for Urban Aerosol Characterization. Department of Energy (DOE), 2023-2025. Role: Co-Investigator. Amount: $1.65M.

The Airborne Multiangle Aerosol Size Spectrometer: A Next Generation Aerosol Probe. National Aeronautics and Space Administration (NASA), 2023-2024. Role: Co-Investigator. Amount: $165,519.

A Low-Cost Holographic Sensor for Urban Aerosol Characterization. Department of Energy (DOE), 2023. Role: Co-Investigator. Amount: $256,500.

The Common-Path Interferometric Particle Sizer (CPIPS): A New Open-Path Airborne Instrument for Characterizing Small Ice and Aerosol. National Aeronautics and Space Administration (NASA), 2022-2023. Role: Co-Investigator. Amount: $149,581.

AerFox: An Adaptive, Agile Modular System for Global Aerosol and Trace Gas Measurements. Department of Energy (DOE), 2022-2023. Role: Co-Investigator. Amount: $250,000.

Investigating the Spatial Variability of Aerosol, Cloud Condensation Nuclei, and Ice Nucleating Particles in Mountainous Terrain. Department of Energy (DOE), 2021-2024. Role: Co-Investigator. Amount: $379,693.

A Counter for Ice Nucleated in Contrails Homogeneously and Heterogeneously (CINCH2). National Aeronautics and Space Administration (NASA), 2021-2024. Role: Co-Investigator. Amount: $749,611.

The Holographic Microphysics Imaging Extinctiometer (HoloMIE): A New Cloud Probe for Characterizing Cloud Particles and Measuring Spectral Extinction. National Aeronautics and Space Administration (NASA), 2022-2024. Role: Co-Investigator. Amount: $799,982

A Photoacoustic Spectral Absorption Instrument with Integrated Calibration System. Department of Defense (DOD), 2021-2022. Role: Co-Investigator. Amount: $246,164.

Highly Accurate Measurements of Cloud Droplets Using the Small-Angle Light Scattering Spectral Analyzer (SALSSA) Probe. Department of Energy (DOE), 2021. Role: Co-Investigator. Amount: $256,500

An Airborne, Miniaturized Cloud Condensation Nuclei Counter. Department of Energy (DOE), 2021. Principal Investigator. Amount: $256,500.

The Holographic Multi-Wavelength Imaging Extinctiometer (HoloMIE): A New Cloud Probe for Characterizing Cloud Particles and Measuring Spectral Extinction. National Aeronautics and Space Administration (NASA), 2021. Role: Co-Investigator. Amount: $131,499.

Novel Ambient Light Extinction Measurements to Characterize Atmospheric Effects in Directed Energy Test Ranges. Department of Defense (DOD), 2021. Role: Principal Investigator. Amount: $50,000.

A Microfluidic Ice Nucleating Particle Counter for Continuous Measurements from Small Aerial Platforms. Department of Energy (DOE), 2020-2022. Role: Principal Investigator $1.55M.

A Counter for Ice Nucleated in Contrails Homogeneously and Heterogeneously (CINCHH). National Aeronautics and Space Administration (NASA), 2020-2021. Role: Co-Investigator. Amount: $124,998.

An Airborne Continuous Flow Diffusion Chamber for Measuring Ice Nucleating Particles National Aeronautics and Space Administration (NASA), 2019-2022. Role: Principal Investigator. Amount: $754,974.

A Balloon-Borne Open-Path Cavity Ringdown Spectrometer for Measuring Atmospheric Extinction and Validating Remote Sensing Products. National Aeronautics and Space Administration (NASA), 2019-2020. Role: Co-Investigator. Amount: $124,998.