Ryan C. Moffet, PhD

Group Manager, Science Expertise and Support

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Dr. Moffet has over a decade of experience conducting research that applies measurements of individual aerosol particles to problems related to climate change, human health, and atmospheric visibility. Since joining Sonoma Technology in 2017, Dr. Moffet has been working on projects involving fenceline monitoring of petroleum operations using open-path measurements, and applying low-cost sensors to measure fugitive methane emissions. Dr. Moffet is also involved with air quality field study design, instrument selection, quality assurance documentation, and field operations.

Before joining Sonoma Technology, Dr. Moffet was a Research Assistant at UC San Diego, where he received his PhD in chemistry. His thesis was focused on developing and applying measurements of the physical, chemical, and optical properties of individual aerosol particles to solve problems associated with polluted environments. He participated in field observations and collection of atmospheric particles from locations including the Amazon Basin (GoAmazon 2014/15), Chile (VOCALS), Mexico City (MILAGRO), and many others. After field collection, Dr. Moffet used synchrotron light sources (large electron accelerators operated at national laboratories) to microscopically analyze large numbers of particles for chemical speciation and morphology. Atomic and molecular information was obtained from analysis of Scanning Transmission X-ray Microscopy coupled with Near Edge Absorption X-ray Spectra (STXM/NEXAFS) for light elements (C, N, O) or metals (Fe, Zn). Dr. Moffet also used synchrotron-based X-ray fluorescence (XRF) and scanning electron microscopy coupled with energy dispersive X-ray analysis (SEM-EDX) to obtain information on heavier elements. Dr. Moffet wrote custom software to handle the complex datasets produced by these imaging techniques. He also leveraged real-time particle and gas phase measurements and dispersion models to help address the scientific questions arising in specific studies.

Education

- PhD, Chemistry, University of California, San Diego
- MS, Chemistry, University of California, San Diego
- BS, Chemistry, San Francisco State University

Memberships

- American Geophysical Union
- American Association for Aerosol Research
- American Chemical Society

For a list of publications, see sonomatech.com/ResPub/RCMpub.pdf

After completing his PhD, Dr. Moffet became a Glenn T. Seaborg Postdoctoral Fellow at UC Berkeley and Lawrence Berkeley National Laboratory, where he applied advanced soft X-ray imaging techniques to study the chemical speciation and morphology of individual aerosol particles. After his postdoctoral appointment, Dr. Moffet moved to the University of the Pacific, where he continued his research on individual particles and taught courses in general chemistry, analytical chemistry, and instrumental analysis.

Dr. Moffet is a co-author of one book chapter and 34 peer-reviewed publications, and he has presented numerous works at scientific conferences.

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