

Research Group Foci:

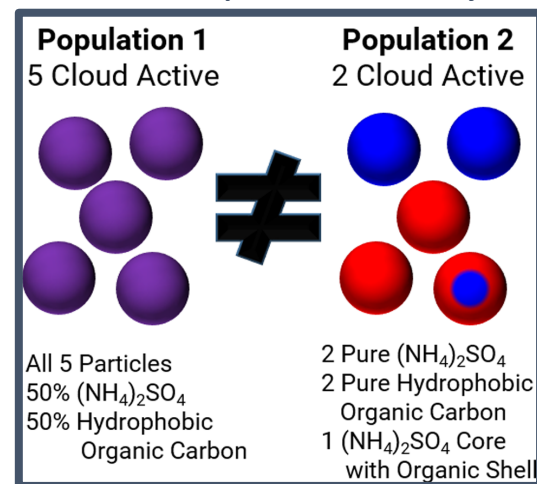
- Arctic trace gases, aerosol, and snow chemical composition
- **Individual particle analysis for size, chemical composition, and source identification**
 - *Off-line*: Computer-controlled scanning electron microscopy with energy dispersive X-ray spectroscopy (CCSEM-EDX) at EMSL and Univ. of Michigan
 - *On-line*: Single-particle mass spectrometry
- **Previous aerosol field campaigns** (bold = ARM field campaigns):
 - **Utqiagvik**: Jan./Feb. 2014, **Aug.-Sep. 2015**, Mar.-May 2016, **Nov.-Dec. 2018**
 - **Oliktok Point**: **Aug.-Sep. 2016**, **Mar.-May 2017**
 - **Chukchi & Bering Seas**: Aug. 2016, Aug. 2017
 - **High Arctic**: Jul.-Sep. 2018
- **DOE Early Career Grant & ARM Field Campaigns**:
 - Nov. – Dec. 2018, NSA: APUN (Aerosols in the Polar Utqiagvik Night)
 - Single-particle mass spectrometry + aerosol collection for CCSEM-EDX
 - **Sep. 2019 – Oct. 2020: MOSAiC!**
 - Particle collection for CCSEM-EDX
- **Let's collaborate! We can analyze specific individual particle samples, or deploy impactors.**

MOSAIC Deployment of Aerosol Impactor **M** (ARM guest instrument)

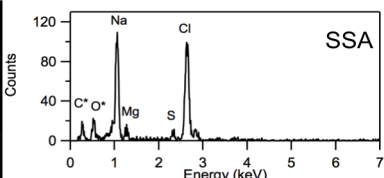
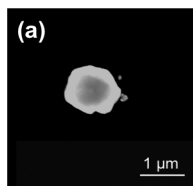


- Autonomous rotating 3-stage (size-resolved) DRUM impactor with daily sampling time resolution
- Offline CCSEM-EDX for individual particle morphology and elemental composition
- Collaboration with Jessie Creamean, Colorado State Univ., who will also be deploying a DRUM impactor for offline INP analysis
- Previously deployed at Oliktok Point, AK for Mar. – May 2017 ARM field campaign

Why do we care about individual particle analysis?



Ault & Axson 2017, *Analytical Chem.*



■ SSA ■ Partially aged SSA ■ OC ■ Soot
■ Sulfur ■ Biomass burning ■ Dust

