

MAS20-2020-000098

Abstract for an Invited Paper
for the MAS20 Meeting of
the American Physical Society

Atmospheric Aerosol Chemistry: Climate and Air Quality

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Despite much effort in past decades, uncertainties in both climate impacts and health effects of atmospheric aerosols remain large. During the last twenty years, aerosol mass spectrometry (AMS) has shown that sub-micron aerosol chemical composition is roughly 50:50 inorganic and organic worldwide, with secondary highly oxidized organics dominating the latter. Parallel application of chemical ionization mass spectrometry (CIMS) has provided the first observation of molecular cluster ions involved in atmospheric nucleation, including detection of highly oxidized multifunctional (HOM) organics in the gas phase. These results will be discussed in the context of their impact on atmospheric aerosols, air quality and climate; from the boreal forest to Chinese megacities. Aerodyne Research, Inc.; INAR (Physics), University of Helsinki