

ATS/CIRA Colloquium

Solomon Bililign

Visiting ATS from North Carolina A&T

Modeling Refractive Index of Biomass Burning Aerosols

Hosted by Jeff Pierce

Friday, Oct. 6, 2017

ATS room 101

Discussion will begin at 11:15 a.m.

Refreshments will be served at 10:45 a.m. in the weather lab

The refractive index (RI) is one of the most fundamental parameters differentiating aerosol species. It is important to constrain the RI of aerosol components since there is still significant uncertainty regarding the RI of biomass burning aerosols. Experimentally measured extinction cross sections, scattering cross sections and single scattering albedos, for white pine soot under two different burning and sampling conditions were modeled using T-Matrix theory. The refractive indices were extracted from the calculations. Experimental measurements were conducted using a cavity ring-down spectrometer to measure extinction and a nephelometer to measure scattering of size selected aerosols. Soot was obtained by burning white pine using (1) an outdoor burn drum, where the aerosols were collected in distilled water using an impinger and then re-aerosolized after several days, and (2) a tube furnace to directly introduce the soot particles into an indoor smog chamber, where soot particles were then sampled directly. In both cases, filter samples were also collected and electron microscopy images were used to obtain morphology and size information used in T-Matrix calculations. In this talk a brief introduction of major goals and activities (past and present) in the NCA&T Atmospheric Chemistry/physics group will be presented followed by results of our most recent work on modeling of refractive index of biomass burning aerosols from white pine will be presented.

Link to colloquia page: <https://www.atmos.colostate.edu/colloquia/>