



A broadband cavity-enhanced spectrometer for measuring the extinction of aerosols at blue and near-UV wavelengths

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We describe a new broadband cavity-enhanced absorption spectrometer for sensitive extinction measurements of aerosols. The instrument is distinguished by its broad and continuous spectral coverage from the near-UV to blue wavelengths (ca. 320 to 450 nm). The short wavelength region has been little explored compared to visible wavelengths, but is important because (1) brown carbon (BrC) absorbs strongly in this wavelength region, and (2) absorption of near-UV radiation in the atmosphere alters the photolysis rate of the key atmospheric species O_3 , NO_2 , and HONO, with implications for air quality and atmospheric oxidation capacity. The instrument performance and the effect of a switchable in-line filter are characterised. Early results using the instrument in the TROPOS atmospheric simulation chamber are presented. These experiments include studies of secondary organic aerosol formation (SOA), and biomass burning experiments of rice and wheat straw, followed by experiments simulating particle aging under daytime and nighttime conditions.