



## **Retrieving the light absorption properties of the shell for atmospheric aerosols containing black carbon in India**

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The microphysical properties of atmospheric aerosols were measured in Mukteshwar, India, in February-March in 2014. The instrumentation included a Single Particle Soot Photometer (SP2) for black carbon mass distributions, a seven wavelength aethalometer for the spectral absorption properties of aerosols along with other supportive measurements. Importantly, SP2 revealed, that a portion of the aerosols contained certain amounts of black carbon embedded in other unknown materials. Assuming that a known portion of the observed particles consist of a black carbon core inside a spherical shell, this work aims to estimate the spectral light absorption properties of the unknown shell component. The estimation was done by modeling the spectral absorption of aerosols using a Mie scattering assumption for spherical core-shell particles. This model estimate for absorption was then matched with the one measured by aethalometer by varying the modeled properties of the shell. As result, an estimate for imaginary refractive index of the shell was retrieved. Further, radiative transfer modeling was used to examine the impact of the shell material to the radiative effect of aerosols.