

## **On the Optical Characterization of Incense**

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While it is generally known that air pollution changes the dynamics of the environmental processes that govern our planet, less noticed are the health outcomes that are the result of continued exposure to indoor air pollutants. Particulate matter, fine particles that are the result of combusting certain materials like coal and biomass, deposit themselves deep in the lungs, and are of interest in how they correlate with health issues like emphysema and bronchitis. This study focuses on optically characterizing a new type of particulate matter, incense along with studying black carbon (soot), and environmental tobacco smoke (second-hand smoke) in the ultraviolet and visible spectrum. It was found that optical properties are indistinguishable between environmental tobacco smoke and incense, and that the two cannot easily be measured or discriminated. It was also found that field samples of black carbon absorb more efficiently in the ultraviolet (UV) than in the visible spectrum. These findings imply that current methods used by public health officials to measure specific levels of indoor second hand smoke and soot pollutants are being confounded by both incense and the new characteristics of black carbon found in the UV region.