

## **Analytical activities at the U.S. EPA regarding organic particulate matter**

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Fine aerosols are emitted from a wide variety of natural and anthropogenic sources. Anthropogenic aerosols exhibit detrimental effects on visibility, global climate, and human health and thus are of environmental concern. In turn, there is much interest in investigating the complex chemical and physical properties of these aerosols. Despite its refractory nature, there is particular emphasis on developing novel analytical-chemical techniques that improve our understanding of the carbonaceous aerosol fraction. This lecture describes how a unique set of analytical methodologies developed by the U.S. EPA and collaborators can be combined to further characterize carbonaceous matter in combustion source and atmospheric aerosol samples. Specifically, fine aerosol emissions from biomass burning, jet aircraft, motor vehicle, and fossil fuel-firing stationary sources are examined using a blend of chromatographic, spectroscopic, imaging, and photophoretic techniques. Application of these techniques provides heretofore unavailable information about particle surface chemistry, soot nanostructure, organic marker composition, and photon-induced particle properties. In sum, a clearer compositional picture of the refractory carbon component in these aerosols will evolve.