

Adsorption of polycyclic aromatic hydrocarbons onto the components of Kosa aerosols and their stabilities.

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Adsorption of polycyclic aromatic hydrocarbons (PAH) onto the components of Kosa aerosol and their subsequent stabilities were investigated in laboratory to determine the most effective materials and the roles as carrier and/or decomposer of PAH, anthropogenic materials. Quartz, illite, kaolinite, α -alumina and humic acid were participated to the adsorption experiments as components of Kosa aerosols because of different surface properties. Phenanthrene and pyrene, dominant PAH in contaminated environments, were used as adsorbates as model PAH compounds. As the results of the experiments, humic acid has the highest adsorptive capacity on both surface area and weight basis. PAHs on humic acid were more stable after UV irradiation test than those on the minerals. Consequently, it was concluded that humic acid was the most effective materials as a carrier of PAH among the tested materials. The presence of even small amounts of humic acid on a mass basis will exert a large influence on the behavior of PAH transport. However, humic acid in nature is usually and strongly associated with minerals, especially with clay minerals in the case of Kosa aerosols. Therefore, humic acid-clay mineral interaction in atmosphere is also necessary to take into account to understand roles of humic acid on PAH behaviors.