

## DIURNAL CHARACTERISTICS OF SPM AND PM<sub>2.5</sub> IN THE URBAN ATMOSPHERE OF TOKYO, JAPAN

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The characterization of suspended particle matter (SPM) and PM<sub>2.5</sub> in the urban atmosphere of Tokyo, Japan was carried out during a period from 22-26 July 2002. The samples of SPM and PM<sub>2.5</sub> were collected by low-volume samplers with sampling intervals 6h and the concentrations of major ions, elements, organic and elemental carbons were quantified. Size distributions of particles were investigated simultaneously using Andersen Cascade Impactor. During sampling period, meteorological conditions including vertical profiles of wind and temperature were investigated. The major components of SPM and PM<sub>2.5</sub> were organic carbon (OC), elemental carbon (EC) and sulfate. The carbonaceous species (OC+EC=TC) particularly accounted for up to 58% of SPM and/or PM<sub>2.5</sub> mass. Based on the ion balance and size distributions of ionic species, it was found that the main chemical form of sulfate was (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub>. Mass concentrations of PM<sub>2.5</sub> made up 70% of SPM on an average, however which increased up to 90% of SPM at a high concentration episode. The ratios of OC to TC (OC/TC) in daytime were larger than that in nighttime. The chemical characteristics of particles indicated that there were two mechanisms of high concentration of SPM and PM<sub>2.5</sub> as follows: (i) active photochemical process caused high concentration of OC and sulfate so that (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub> of particles was increased. (ii) stable meteorological condition caused accumulation of primary particles, mainly emitted from vehicle exhaust, resulted in high concentration of OC and EC.