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# Physical and chemical characteristics of PM0.1 in East Asian cities by East-Asia Nanoparticle Monitoring Network (EA-Nanonet)

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East Asia-Nanoparticle Monitoring Network (EA-Nanonet) was found based on the air quality status in East Asia that experiences smoke and haze problem. The campaigns have been conducted to discuss the status and characteristics of PM0.1, or, nanoparticles in 10-countries in East and South-East Asia with Japan, South Korea, China, Taiwan, Thailand, Cambodia, Vietnam, Indonesia, Malaysia and Singapore. Current ongoing activities are continuous monitoring of air pollutants such as Particulate Matter especially, nanoparticles, Black Carbon (BC), and others. The PM was collected by Nano-samplers for size-segregated ambient particles. The Nano-sampler can be used to sample a greater amount of nanoparticles at ambient pressure. The used sampler consisted of 4 impactors stages (including >10, 2.5-10, 1-2.5, 0.5-1 $\mu$m), an inertial filter stage (0.1-0.5 $\mu$m) as well as a backup filter (<0.1 $\mu$m ). Carbon components (Organic Carbon (OC) plus Elemental Carbon (EC) in PM collected on quartz fiber filter were investigated by the Interagency Monitoring of Protected Visual Environment using Thermal/Optical Reflectance (IMPROVE_TOR) technique. Nanoparticles were collected from 11 sites in East Asian countries during March 28th to April 3rd, 2016 with flow rate 40 L/min. Organic carbon (OC) and elemental carbon (EC) concentrations were measured. OC originates from primary sources and formation of secondary organis carbon (SOC) by photochemical activity in the air. The concentrations of OC were higher than EC in every sites. The OC/EC ratios in PM0.1 at the sampling sites ranged from 1.91 to 9.06. The highest of OC/EC ratios were observed at Hat Yai, sounthern Thailand (9.06). High OC/EC ratios might be attributed to OC-rich source emissions (i.e. biomass burning) and secondary organic aerosol (SOA) formation. The lowest OC fractions was Bangkok, Thailand (1.91). Overall, this result indicates that emission sources are soot emissions of open burning, industrial and coal combustion, as well as aged traffic emissions transported.