

## ABSTRACT

*The micro-particle observation campaign has been carried out in the Bandung Raya air basin during the rainy season (February 14-26 2018) and dry season (August 17-September 11, 2018). Observation of micro-particles using nanosamplers with sizes > 10, 2.5-10, 1-2.5, 0.5-1, 0.1-0.5 and <0.1  $\mu\text{m}$ . The result of the nanosampler is the concentration of particulate mass (total suspended particles) with the average rainy season below  $100 \mu\text{g m}^{-3}$ . These results contrast with the average in the dry season ( $> 100 \mu\text{g m}^{-3}$ ).  $\text{PM}_{2.5}$  and  $\text{PM}_{10}$  are typical measurements of these observations, which are sourced from roads, industries, and natural sources (soil dust and sea salt). The result of the mass analysis is the carbon content with the total carbon yield (TC), on average  $\sim 72\%$  is organic carbon (OC). The OC sources come from road activities ( $\sim 52\%$ ) and biogenic ( $\sim 72\%$ ), which are primary pollutants and are the source of the most OC / EC fractions with most sources, namely fossil fuels, dust, and diesel engines. The rest is inorganic carbon (EC), There are two forms of particulates in EC, namely fresh particles contained in char-EC and aged particles from sources of char-EC (carbon emissions mixed with soil elements) and soot-EC (mixture of carbon condensation with elements in the atmosphere, such as sulfate and nitrate).  $\sim 79\%$  of the EC content is char-EC, with the main source being direct emissions of motor vehicles. Meanwhile  $\sim 21\%$  of the EC content is soot-EC, which is condensation from the emissions of motorized vehicles. Another mass analysis is the concentration of ion compounds, the dominant results found are ammonium sulfate  $((\text{NH}_4)_2\text{SO}_4)$ , ammonium nitrate  $(\text{NH}_4)\text{NO}_3$ , and salt (NaCl). With the geographical location of Bandung Raya, the source of pollutant is not local pollution. Based on the NOAA HYSPLIT back trajectory model, the main sources of long-distance transportation come from sea activities such as sea transportation and biota which produce nitrate and sulfate. Because of the geographical location, transportation, industry and human activities are the main sources of pollution.*

*Keywords: Air Pollution, Nanosampler,  $\text{PM}_{2.5}$ , OC/EC, and Ion*