



Characterization of aerosol size using fractal theory in experimental data collected in north of Chihuahua City.

E. Herrera, B. Trujillo, A. Vázquez, R. Balam.

Centro de Investigación en Materiales Avanzados; Departamento de Medio Ambiente y Energía, Chihuahua, México.

Studies of multi-scaled atmospheric particles are based in different mechanisms of nano-particles growing. These mechanisms depend of many variables such as chemical composition, gas phase concentration; meteorological variables etc. and have been the indirect cause of different pulmonary diseases. Epidemiology studies have indicated an association between the mortality and the incidence of disease due to the concentration mass of atmospheric fine particles generated by the combustion. The area of surface of aerosol particles, is the site that involves the interactions gas-particle, that increases to the toxicity of the particles (Ku and Maynard 2005; Wentzel ET to. 2003). Nevertheless, the chemical specific mechanisms and/or physical, relating the effects of the health to the aerosol haven't been understood yet (Linak ET to. 2007). For the understanding of these mechanisms it is necessary detailed studies of the morphology and the chemical composition of particles (Wentzel ET to. 2003; Filippov ET to. 2000). The morphology has been described by different methods based on the contour or density of the particle, example of them is: form factors; chain codification; dimension fractal and functions of contour example the transformation of Fourier and wave (Kindratenko ET to. 1997; Kindratenko ET to. 1995; Kindratenko 2003). There isn't sufficient information of the possible modifications of the size variables and forms of the different particle, with respect to the environmental and temporary conditions. The use of multivariate techniques sets out to know the structures interdependence of the size, forms and atmosphere. Results of the calculations of different form factor parameters, Lacularity, and Hurts coefficients are exposed in this work with using the measurements of particles obtained with MOUDI (Micro orifice Uniform Deposit Im-

pactor)(Marple et al. 1991), with particles cuts until 100 nm , collected in north of the City of Chihuahua during the campaign of March and April of 2007.