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Using the Feature software as a tool for the semi-automated characterization of atmospheric particles.

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Nowadays, the quality of the air is one of the biggest concerns for society. Several studies prove the different and adverse effects of the atmospheric particles in environmental and human health. To understand the behavior of these particles is crucial to know their individual characterization. The characterization of each particle requires a technique that provides information about size, shape and chemical composition. Scanning Electron Microscopy (SEM) and Transmission Electron Microscopy (TEM), couple with an Energy Dispersive X-ray system (EDX) are frequently used. These techniques give a lot of data that need to be analyzed. So, the objective of the present work is to create a methodology that is capable to acquire the data, analyze and present the results, using the Feature software. Feature is a software created by Bruker to do Digital Image Analysis (DIA). This software is able to separate the particles of the substrate and identify each individual particle present in the sample. For each particle the program allows obtaining information about geometric
parameters (sizing) and chemical composition (chemistry). To create the methodology was used a VP SEM Hitachi S - 3400N couple with EDX system. Different samples were used, some to estimate the error associated to the parameters measured and others to define the chemical classes. In the present work we show all the steps for analysis of atmospheric particles using Feature.

Keywords: Atmospheric particles; Individual particle characterization; Feature software; SEM-EDX.