

## **IBERULITES: COMPLEX AEROSOLS. POSSIBLE SHUTTLES FOR THE TRANSPORT OF BIOLOGICAL MATERIALS**

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The iberulites are a special type of atmospheric microspherulites formed in the troposphere under certain conditions and finally fall to the Earth's surface. Their average size is about 100 microns. Its name comes from where they were discovered: the Iberian Peninsula. Iberulites are co-associations with axial geometry and pinkish colour, consisting of mineral grains and noncrystalline components, structured around a core of coarse particles with a smectitic cover and a single vortex. They are formed in the troposphere by complex dustwater-gas interactions. The interactions between water drops and aerosols (dust) from the Sahara, create complex hydrodynamic conditions that cause water-dust drops, which are the precursors of iberulites. Precursor drops fall to lower levels of the troposphere and that involves the coalescence process, drying and the formation of a vortex. The core of iberulites consists mainly of grains of calcite, quartz, feldspar and dolomite. The cover is composed of clay minerals, sulfates, chlorides and amorphous silica, some of these minerals are neoformed. The overflight of areas with volcanic emissions containing sulfur (the Canary and the Azores islands) incorporates SO<sub>2</sub> on the surface of the iberulites. With the humidity SO<sub>2</sub> is converted into sulfuric acid which attacks the minerals in the cover producing new minerals (alunite-jarosite and gypsum mainly). Subsequently, the descent into the marine boundary layer (MBL) of the Atlantic Iberian-Moroccan induces the incorporation of marine salts, planktonic organisms and other biological specimens such as brochosomes, bacteria and viruses. The iberulites are large aerosol particles very fragile and brittle formed by many small-sized mineral grains, which can be inhaled into the respiratory tract. It is during the summer months when more amount of Saharan dust reaching southern Europe and iberulites are part of this dust. The adverse health effects associated with exposure to dust include chronic obstructive pulmonary disease, exacerbation of asthma and allergy, fibrosis, slower lung development in children, and lung cancer. Recently there has been observed a close correlation between Saharan dust intrusions and child and senile mortality.

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