



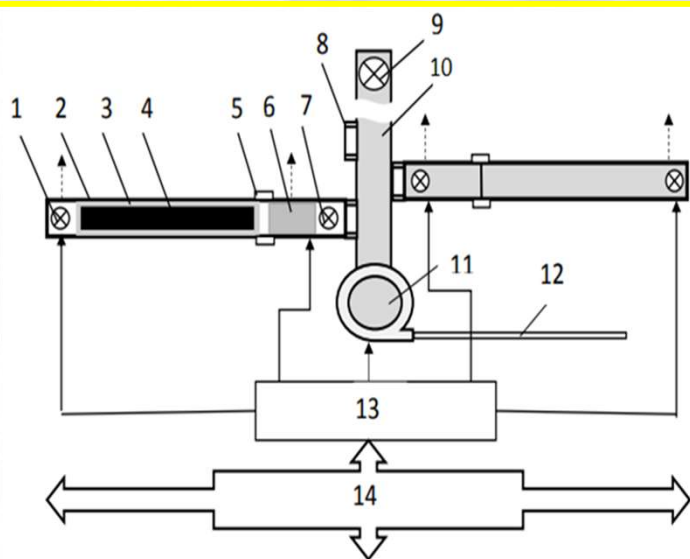
## ATMOSPHERIC AIR SAMPLING PROCESS

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**APPLICATION FIELDS:** Environmental monitoring, Carbon nanoclusters.

**AIM of invention** is monitoring of harmful impurities in the form of gases and aerosols, including those in low concentrations; determining 3D distribution dynamics of air pollutants in hard-to-reach areas adjacent to the stationary and mobile sources.

**SOLUTION:** Atmospheric air sampling process consists in the forced filtration of air through a fibrous filter installed in a container, whereas the additional filtration is done by using a second filter made of carbon nanoclusters  $C_n$ , both components (including the container) having been subjected beforehand to heat treatment in vacuum. Inside part of the container is maintained in vacuum until the collection of air samples. Afterwards, the impurities retained are extracted separately from the two filters, a fibrous filter with solvents and a nanocarbon cluster filter, via thermal desorption.



Device transfer to the site of sample collection, recording coordinates and controlling sample collection process are done by drone. The method is implemented with the help of **air samples collection device in the atmosphere**, which includes an air distribution appliance 10, equipped with a ventilation valve 9, coupled to an adjustable air pump 11, an air duct 12, a mechanism 1 and 7 for coupling the container 2, a programmed control unit 13, and one or more containers with two valves, inside of which a fibrous filter 3 is placed for additional filtration. The filter 3 is made in the shape of a cylindric casing out of a composite porous material and an absorbent substance composed of nanocarbon clusters.

**ADVANTAGE of the invention** consists in an increased efficiency and reduction of costs in the process of taking air samples in the atmosphere, especially in hard-to-reach areas adjacent to both stationary and mobile sources.

**IMPLEMENTATION STAGE:** Laboratory stage.

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