ATMOSPHERIC SAMPLER FOR VOLATILE ORGANIC COMPOUNDS

INVENTION DESCRIPTION

Passive samplers allow controlling the presence of contaminants in a medium, establishing its average concentration in the sampling time interval. However, current atmospheric samplers are limited to the analysis of families of compounds with similar physicochemical properties. Therefore, for Multiple sampling of a large number of contaminants, it is necessary to use different types of samplers increasing the overall cost of the process.

Researchers from Universitat de València have developed a new versatile, easy and rapid method and device for the detection of volatile organic compounds in air. It is based on the development of the passive sampler (VERAM) consisting of a flat tube of polymeric material filled with a solid phase or mixture of phases.

Technology brings the advantage of versatility, since it allows with a single device to sample many contaminants using a combination of solid phases. With this combination, the technology allows the sampling of all possible contaminants in the air and the specific sampling of a family of compounds according to their chemical properties. Contaminant retained in the sorbent are directly determined by gas chromatography using the head space injection after of a heating of the sampler device, minimizing sample handling, avoiding the use of solvents and reducing the analysis time. The new device of sampling is less expensive since it is based on a simple and fast manufacturing process. The device allows a multidirectional sampling, versus unidirectional or radial sampling of other samplers, which allows obtaining more accuracy in the result.

BUSINESS APPLICATION SECTORS

Chemistry and environmental sectors: The invention is applicable to the environmental control industry: as a method for passive sampling of air pollutants by VERAM device and subsequent determination of these organic contaminants. This protocol can be used to assess occupational health at work (eg. refineries or paint factories) and for the selection of areas with critical pollution for the monitoring networks for air quality.

TECHNICAL ADVANTAGES AND BENEFITS

The main advantages provided by the invention are:

- Versatility of the device that allows to carry out a single sampling of many contaminants with a single device containing a combination of solid phases.
- High adsorption capacity and analytical sensitivity with lower sampling time.
- Speed and low cost of the analysis of pollutants. Thermal desorption and headspace injection minimize sample handling. It does not require the use of solvents and reduces analysis time.
- Lower cost of the sampling devices that have a simple and fast manufacturing process.
- VERAM allows multidirectional sampling, versus unidirectional or radial sampling of other samplers encapsulated using solid sorbents.

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DEVELOPMENT STATUS TECNOLOGY

Technology developed at laboratory level.

INTELLECTUAL PROPERTY RIGHTS

The technology is protected through the following patents:

Spanish patent application P200900912, titled “Procedimiento para el muestreo pasivo de contaminantes atmosféricos mediante el dispositivo “VERAM”.

COLLABORATION SOUGHT

- License agreement, manufacturing or marketing.
- R & D project to complete the development or apply to other sectors.
- Subcontracting agreement with another company.
- Possible spin-off (looking for partners)

RELATED IMAGES

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