

Electrochemical Sensor for the Detection of PFOS in Water

A new electrochemical sensor based on molecularly imprinted polymers, used to detect environmental pollutants belonging to the PFAs family



Header image provided by the university

IP Status

Patented

Seeking

Licensing, Development partner

Background

PFAs are organic compounds classified as emerging contaminants, widely used in a variety of industrial and consumer products. These compounds are very toxic and can be found in groundwater or surface water used to drink or irrigate.

Pollution from PFAs is a problem of global interest, due to the characteristics of persistence, bioaccumulation and toxicity of these pollutants, widely used as additives in a variety of industrial products. The current technique for the determination of PFAs is the high-performance liquid chromatography (HPLC) coupled to mass spectrometry, that requires complex and expensive instrumentation and a complicated pre-treatment of the sample.

Tech Overview

The object of the invention is a new method to electrochemically test for these environmental pollutants, based on molecularly imprinted polymers. The method can be used in a portable sensor, capable to measure contaminants on site and can detect environmental pollutants belonging to the PFAs family; in particular Perfluorooctane Sulfonate (PFOS) and its derivatives.

Specifically, the sensor has a high sensitivity for detection of PFOS and, compared to the most commonly used detection techniques, it has significant advantages in terms of ease in measuring and in limits of detection at low cost (**Figure 1**).

Benefits

- Ease of measurement
- Easily utilized by novice
- Large availability of instrumentation
- Excellent limits of detection at low cost
- Possibility of easy miniaturization and automation of procedures
- Can be used on site

Applications

- Laboratories of analytical chemistry: detection of PFOS in liquid media, such as environmental water (e.g. lake water, river water, etc.), and in food or biological samples, such as e.g. blood, milk, beverages, etc.
- Water suppliers and private citizens: detection of PFOS in environmental water

Opportunity

Open to collaborative projects to further develop the technology and/or licensing.

Patents

- IT: 102017000026417

Appendix 1

Figure 1

