

Reversible entrapment process for polar molecules

Environment / Pollutants / Detection tool



REFERENCE

POLYTRAP [D01508]

KEYWORDS

POLYMER / SBSE / ADSORPTION /
DESORPTION / POLLUTANTS /
POLARITY



APPLICATIONS

- Tool for physicochemical analyses : sample preparation (SPE cartridge, stir bar sorptive extraction), chromatography...
- Environmental monitoring tool (toxicology, ecotoxicology) : water treatment, water analyses
- Food and feed testing : fruit juice aromatic profile, pesticide detection...
- Biological / medical analyses : anti-doping control...



TARGET MARKETS / END USERS

- Water analysis
- Water / wastewater treatment
- Pharmaceutical industry
- Cosmetics industry
- Chemical industry

Technology readiness level

TRL 3



INTELLECTUAL PROPERTY

Priority patent application FR1761788



RESEARCH TEAM

Institut des Sciences Analytiques (ISA)
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DESCRIPTION

This process is based on the use of a polymer made from bio-sourced molecules, able to reversibly adsorb organic molecules of any polarity, including highly polar molecules such as glyphosate. It can be used to trap all organic molecules within an aqueous environment (e.g. pollutants, small biological molecules, pharmaceutical drugs...), and to release these molecules in a controlled environment through thermic or solvent desorption, depending on the final use (physicochemical analyses...). 100g polymer are required to capture 1g molecules. The material can be produced in different forms (wire, membrane, granules, powder...), and can be used as a coating on various objects (bar magnet, disks...).

COMPETITIVE ADVANTAGES

- Adsorption of any type of organic molecules, including highly polar molecules (e.g. glyphosate)
- High thermic stability – up to 400°C
- Loading capacity of 1% (1g pollutant for 100g polymer)
- Low-cost raw material
- Lifespan (multiple adsorption / desorption cycles)

DEVELOPMENT STATUS

- Laboratory-made stir bar sorptive extraction (SBSE)
- Tests made on various types of molecules : glyphosate, caffeic acid, amphetamine, atrazine metabolites...

PARTNERSHIP

PULSALYS is looking for industrial partners interested in developing / co-developing this process.



OUR OPPORTUNITIES

www.pulsalys.fr/entreprise/offres-technologies/

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