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Instrumente Structurale 2014-2020

Patent application No. A-00123/2022

PROCESS AND ABSORBENT MATERIAL FOR ABSORPTION OF ORGANIC POLLUTANTS FROM AQUEOUS SOLUTIONS

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The present invention relates to an adsorbent material and to a process for obtaining it, used to reduce the level of organic pollutants in aqueous solutions, at ambient temperature and atmospheric pressure.

The adsorbent obtained according to the invention eliminates the disadvantages of current approaches, in that it is presented in the form of a powder, having a specific surface area between 35-55 m^2/g, with the crystallites size below 25 nm and the method of obtaining it is easily scalable to industrial scale.

The adsorbent demonstrates adsorption capacity, evaluated in a batch system, against organic micro-pollutants of industrial origin (demonstrated by phenol adsorption) and against organic micro-pollutants from pharmaceuticals and personal care products category (demonstrated by ibuprofen adsorption).

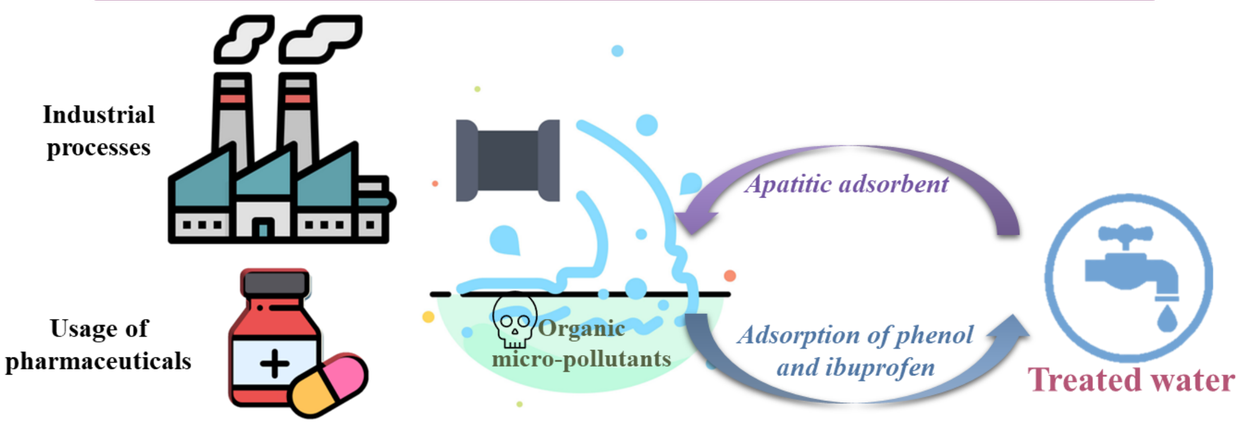
ADVANTAGES OF THE PROPOSED INVENTION

- It is stable and allows the adsorption of organic micro-pollutants in conditions similar to real ones (ambient temperature, atmospheric pressure and neutral pH)
- It is reproductible in terms of physical and structural properties
- No secondary pollution (mud, ash, etc.)
- Can also be used in accidental pollution, with high concentrations of pollutant.

ADSORBENT'S CHARACTERISTICS

High adsorption capacity → High stability → Easily regenerated → Possibility of reusage → Cost-effective method

ILLUSTRATED SCHEME OF WATER DECONTAMINATION



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