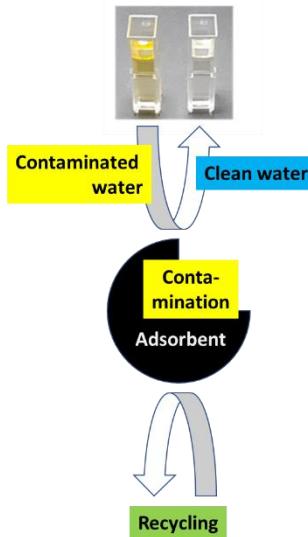


Sustainable and low cost water treatment materials



Description

Adsorbents based on renewable raw and waste materials, e.g. from the food industry and agroindustry, are produced via a variety of chemical modifications, thermal treatment, and addition of further functional components, such as abundant minerals like clay. The resulting materials act as adsorbents that can be used for the removal of heavy metals, organic pollutants, pharmaceuticals, pesticides, herbicides, and biological contamination.

Details

The Laboratory of Supramolecular and Materials Chemistry has about 15 years of experience with carbon-based adsorbents. The major expertise is the synthesis of porous activated carbon and composite materials using a series of pre-treatments and heat treatments. The resulting materials can be tailored for their surface chemistry (i.e. for their interaction with the aqueous environment) and for their pore architecture and pore size. Depending on the contamination that must be removed from (surface) water, the materials can be adjusted for purposes needed.

The materials are synthesized, characterized, and modified in-house using protocols developed in the group. The platform is flexible both in terms of the application and in terms of the raw materials that can be utilized. As such, the approach provides a platform for treatment of water with different (levels of) contaminations.

Spectrum of Methods

Materials synthesis, pore design and arrangement, materials analysis using thermal analysis, porosimetry, optical and electron microscopy, electrochemical methods, Raman/IR spectroscopy, particle size analysis (sedimentation, filtration, sieving), nitrogen sorption, milling of powders to match size and size distribution requirements, analysis of water samples before and after treatment.

Literature

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Applications

- Water treatment
- Water remediation

Keywords

- Heavy metals
- Pesticides
- Fungicides
- Pharmaceuticals
- Biocontamination
- Activated carbon
- Porous materials
- Composites

Interest in cooperation

- Research-based collaboration
- Contract research
- Industry-sponsored research

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