Poster Presentation

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Triptycene-based hyper-crosslinked porous organic polymers for micropollutants removal from water

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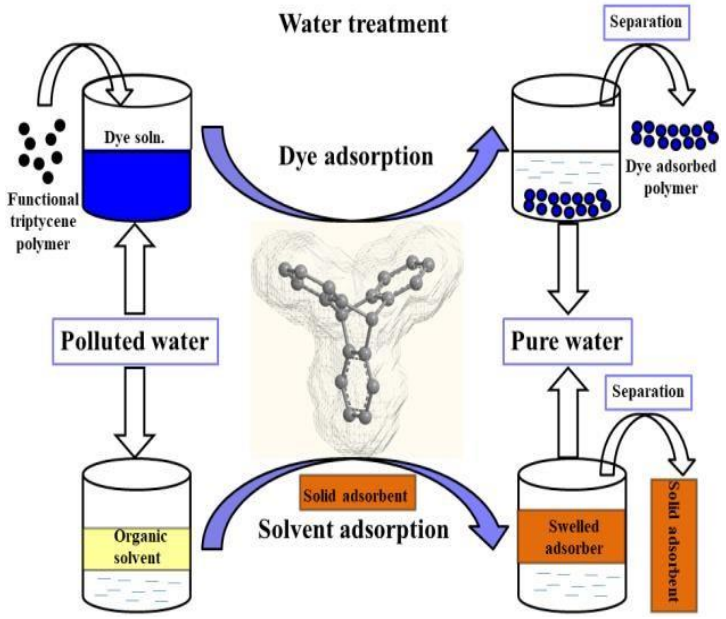
Abstract:

Water is the essential component of our life. With the rise of civilization and industrialization, the use of organic solvents, dyes, oils, pesticides, fertilizers, medicines, etc. have been increased a lot. The use of adsorbents has been considered as the most practical method in the purification of the pollutant water.[1] Traditional porous materials such as activated carbons, zeolites, as adsorbents suffers for low adsorption capacities. Another challenging task in the water treatment is, the cleaning up of oil spills and oil slicks over the surfaces of water along the coastline. Materials like porous graphene, carbon nanotubes, porous BN nanosheets and nanostructured metal-oxides have been made to serve the purpose.[1] Porous organic polymers (POPs) as sorbent materials have attracted much interest due to their extremely good stability, high surface area, tunable functionality, and low regeneration energy.[2] The porous organic polymers, that include polymers of intrinsic microporosity (PIMs), hyper-cross-linked polymers (HCPs), conjugated microporous polymers (CMPs) and covalent organic frameworks (COFs), have been designed as a wide range of sorbent materials. Recently, iptycene-based porous polymers having hierarchical rigid paddle-wheel-like structures have been demonstrated for the fabrication of membrane for water filtration.[3] Herein, we present the fabrication of various triptycene-based hyper-cross-linked POPs for the treatment of waste-water. All the triptycene-based POPs show a tunable surface area, ranging from 250 m^2 g^{-1} to 1550 m^2 g^{-1}. The structure-property relationship in view of treatment of water polluted by dyes and organic solvents are discussed. The present study paves the way for the fabrication of membrane for the separation of oil in water in future.



Triptycene-based functional polymers for the removal of micropollutants (organic dyes and solvents).

References and Notes:

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3. Luo, S.; Zhang, Q.; Zhang, Y.; Weaver, K. P.; Phillip, W. A.; Guo, R. *ACS Appl. Mater. Interfaces*, **2018**, *10*, 15174.