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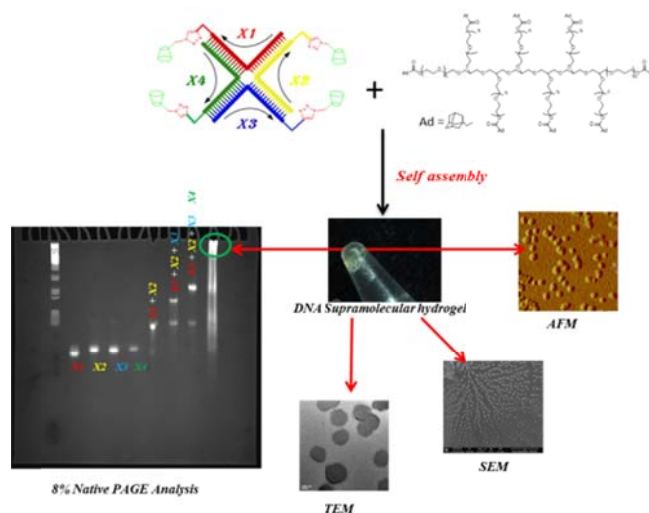
Removal of Organic Micro Pollutants using DNA Based Nanogels

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Abstract:

Organic Micro-pollutants (OMPs) are synthetic organic substances released in water through human activity. They can be found in industrial, agricultural and domestic waste water streams. Some of the micro-pollutants are difficult to treat, such as polycyclic aromatic hydrocarbons (PAHs), herbicides and pesticides, personal care products (PCPs), toxic chemicals, carcinogenic and endocrine disruptive compounds (EDCs) etc. Till to date several methods were developed to remove OMPs. In these some of the OMPs are highly efficient to bind with DNA and form a stable complex with DNA then leads to cause genomic miscoding. PAHs are having high binding capacity with ds-DNA¹ and followed by covalent binding leads to mutation in the genomic system.² DNA has broad range of binding capacity with hydrophobic aromatic molecules.³ Here, we are demonstrating removal of PAHs from water using DNA based nanogels. We used β -cyclodextrins, attached to four different DNA strands which can form Holiday junction, as host and a highly branched polymer having adamantane as guest. Well known supramolecular interaction between β -CD and adamantane will drive the self-assembly and hence leads to the formation of DNA nanogel.



Reference

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