



iVOFm Technique to Decontaminate Water

Why in News?

In order to tackle the problem of [water contamination](#) and **enhance access to clean and drinkable water**, the Indian Institute of Science Education and Research (IISER), Pune has introduced a **macro/microporous ionic organic framework - iVOFm** - to clean polluted water.

What is iVOFm?

- **Viologen-unit grafted organic-framework (iVOFm)** is a **unique molecular sponge-like material to clean polluted water by soaking up the contaminants in it.**
 - There are carcinogenic pollutants in freshwater sources that are removed using **sorbent materials** and **ion-exchange techniques**, but these techniques are not effective enough. iVOFm aims to improve this.
- iVOFm employs **amalgamation of electrostatics driven ion-exchange** combined with **nanometer-sized macropores and specific binding sites** for the targeted pollutants.
 - The **inherent cationic nature** of iVOFm and **macroporosity (cavities >75 μm)** allows fast diffusion of pollutants (organic+inorganic, **>93% removal in 30 seconds**).
 - Unlike normal sorbent materials, this material is found to be **very selective toward toxic pollutants**. It **can be used several times** just like a bath sponge.

What is the Ion-Exchange Technique?

- **Ion Exchange (IX)** is a process of deionisation where **dissolved impurity ions** in water are **replaced by hydrogen and hydroxyl ions**, purifying the water.
- Water softeners are very similar to IX systems since both systems can **remove magnesium and calcium ions** from the water.

[Source: TH](#)

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