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## **IISER Bhopal Scientists Produce Magnetic Porous Carbon Nanoparticles | Madhya Pradesh | 17 Oct 2023**

### **Why In News?**

Recently, researchers at the Indian Institute of Science Education and Research, Bhopal (IISER) have successfully produced magnetic nanoparticles, which are particles approximately one lakh times smaller than the width of a human hair.

### **Key Points:**

- These nanoparticles have been developed for many applications, such as removal of heat and light-induced salts from seawater, extraction of potable water from wastewater contaminated with dyes and deicing and anti-icing processes.
- One of the world's primary global challenges is to obtain clean and usable fresh water from sources such as wastewater and sea water. It is estimated that approximately two-thirds of the world's population will soon live in areas with water scarcity problems.
- Desalination, a process known to exist, can provide local water sources for approximately 40% of coastal communities. Desalination methods that produce usable water from seawater typically involve processes that require a lot of heat, such as distillation or membrane-based technologies such as reverse osmosis.
- However, these methods often require expensive equipment, large setups, and substantial energy consumption. A more sustainable option is photothermal (light+heat)- assisted desalination, which uses renewable solar energy.
- The creation of magnetic nanoparticles with diverse applications ranging from efficient desalination processes to dye removal and de-icing represents an important step towards sustainable and accessible water resources. Advances like these in science provide hope for a future where clean and safe water will be more easily available to communities around the world.
- This research was led by Dr. Shankar Chakma, Assistant Professor, Department of Chemical Engineering, IISER Bhopal.
- The research group's findings have been published in the prestigious peer-reviewed journal of the American Chemical Society - EST Engineering.

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