



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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