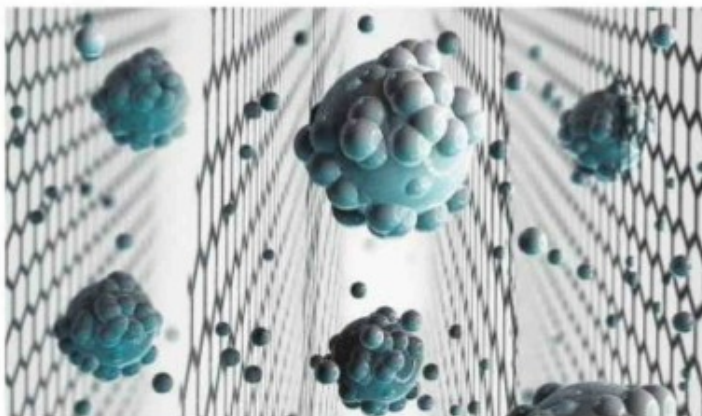


The Sunday Standard- 17- November-2023

The Water Marvel



By MAITHREYI SOOREJ

Graphite is everywhere. In pencil lead, car batteries and glistening kitchen counters. Now, research shows it can also quench thirst. The ubiquitous blackish silver crystalline carbon yields the 'miracle material' graphene, which is at the forefront of innovative solutions for water-related challenges.

Researchers at Khalifa University in the UAE are successfully working on desalination crucial in water-scarce regions like the Gulf. Hassan Arafat, from the Research & Innovation Center for Graphene and 2D Materials (RIC2D), and his team are developing a graphene-enhanced membrane to make sea water drinkable.

In Europe, following the EU's Drinking Water Directive (2020), scientists have been using graphene to clean water. Their aim is to meet the Sustainable Development Goal of ensuring clean water and sanitation. They have invented hollow fiber filters made of polysulfone-graphene oxide (PSU-GO), which cleans the tiny particles and germs in tap water better than existing filters.

In collaboration with Chalmers University and the University of Castilla-La Mancha, ISOF (Institute for Organic Synthesis and Photoreactivity) researchers and Medica S.p.A. created 'adsorptive membranes' capable of ultra-filtering particles and microbes while absorbing pollutants, thanks to graphene oxide. These filters also

outperformed existing methods to remove not just organic molecules, but also persistent pollutants like PFAS and heavy metals in water. That graphene nanosheets can effectively absorb contaminants has been confirmed by Chalmers University researchers. Additionally, the safety levels of these filters have been verified by the University of Castilla-La Mancha.

But wait, there's more. The scientists are not simply stopping at developing water solutions. Researchers at Khalifa University are also proposing that graphene be used to make eco-friendly building materials and renewable hydrogen energy. The only impediment? Making it

cost-effective, since large-scale production would be enormously expensive.

To overcome the hurdle, the innovative method of extracting carbon from

methane, a by-product of the oil and gas industry, is being explored. The idea also aligns with the UAE's cleaner energy goals and achieving zero emissions by 2050. Collaborations with global startups in related sectors are also happening. RIC2D showcased its projects, emphasising their commercialisation potential through partnerships with Grapheal and NanoGrafen during the Graphene Flagship Week in September this year.

The groundbreaking developments with graphene promise not only water purification technologies, but also other environmental and social challenges. Miracle material, all right.

Adsorptive graphene membranes are capable of ultra-filtering particles and microbes while absorbing pollutants

Haribhoomi- 17- November-2023

यमुना में अमोनिया की मात्रा बढ़ने से जल शोधन हुआ प्रभावित

नई दिल्ली। यमुना नदी में अमोनिया की मात्रा बढ़ने के बाद दिल्ली के विभिन्न क्षेत्रों में पेयजल आपूर्ति प्रभावित होने का अंदेशा बढ़ गया है। दिल्ली जल बोर्ड (डीजेबी) के एक अधिकारी का कहना है कि शनिवार को यमुना नदी में खतरनाक अमोनिया की मात्रा बढ़ने से जल शोधन प्रभावित हो गया है। जिसके बाद संभावित है कि दिल्ली के कई क्षेत्रों में जल संकट खड़ा हो जाए। अधिकारी का कहना है कि यमुना नदी में प्रदूषण तय मानकों से कहीं अधिक हो गया है। मात्रा 1.7 पीपीएम से अधिक है और यह डीडी-8 के माध्यम से यमुना नदी में वजीराबाद तालाब तक प्राप्त किया जा रहा है।