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Sandia National Laboratories

MARKET SHEET

Functionalized Mesoporous Carbon for PFAS Sequestration

A new functionalized material reduces human exposure to harmful contaminants by targeting removal of 99 percent of PFAS "forever chemicals" from drinking water.

US Patent Pending

Technology Readiness Level 4

Business Problem

Perfluoroalkyl and polyfluoroalkyl substances (PFAS) are man-made chemicals used in manufacturing products that are resistant to heat, oil, stains, and water.

They have been widely used in consumer and industrial goods like non-stick cookware and raingear. PFAS (known as forever chemicals) are persistent in the environment and can accumulate in wildlife and humans, posing health and environmental risks. Existing methods for PFAS removal are limited, and there is a need for effective solutions.

Manufacturers are voluntarily moving away from PFAS use due to increasing awareness of the associated risks. The EPA established a national drinking water standard for PFAS in 2024, limiting acceptable amounts of two PFAS compounds (PFOA and PFOS) to four parts per trillion. This regulation will help protect communities from exposure to harmful levels of PFAS.

Customer Need

Mitigating PFAS contamination on a large-scale and in household settings is crucial to ensure safe drinking water and reduce human exposure to these harmful substances. Manufacturers and industries require scalable water filtration materials that can efficiently remove PFAS to meet regulatory standards and ensure safe drinking water. Customers, including water treatment facilities, manufacturing plants, households, and military bases, require readily available and scalable solutions to remove PFAS from water sources. There is a need to develop materials that can selectively absorb PFAS and remove 99 percent of PFAS from water sources efficiently and effectively to meet the EPA Safe Drinking Water Act mandate.

Sandia Approach

Researchers are developing innovative materials that can effectively absorb PFAS using functionalized carbon materials to sequester PFAS filtration using a sorbent. These materials can be placed inside a filter that an industry partner develops for both large-scale and household applications.

Competitive Advantage

Sandia's solution differs from available solutions due to its focus on developing materials specifically tailored for PFAS sequestration. To date, there is no comparable solution. The team's innovative approach targets and absorbs PFAS more effectively than traditional methods. Sandia's analytical capabilities and expertise in materials science and water security enhance their ability to develop and test these materials.

Benefits

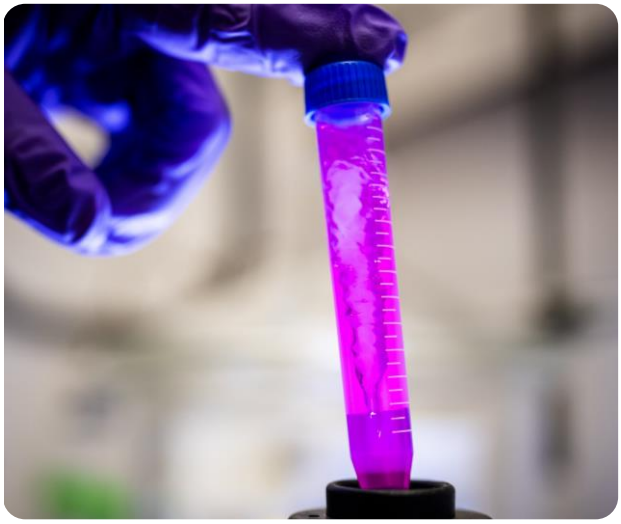
- **Enhanced PFAS removal:** The functionalized materials offer improved efficiency and effectiveness in removing PFAS from water sources.
- **Significant PFAS reduction:** The materials can remove 99 percent of PFAS from water, reducing the risk of exposure and contamination.
- **Improved human health:** Reducing exposure to PFAS will improve public health because they have been linked to liver damage, immune system problems, and an increased risk of certain cancers.
- **National water security:** This technology enhances the sustainability of our water infrastructure and supports industries that require clean water.

Industries & Applications

- Environmental protection and remediation
- Water treatment facilities
- Consumer households
- Manufacturing plants
- Military bases
- Public health

Next Steps

Sandia is seeking partners to develop and commercialize this technology. For more information, please contact Sandia National Laboratories' Licensing and Technology Transfer office.



Contact Us
SD 16059

ip@sandia.gov

ip.sandia.gov

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Featured Images & Captions for Website

Sandia researchers developing PFAS sequestration technology

Sandia’s approach uses functionalized mesoporous carbon to remove PFAS from drinking water