# Novel organic material for Perfluoroalkyl Substances (PFAS) removal

**OTT ID # 1725**

## Applications

Water and wastewater treatment, point-of-use water filtration, filtration media, point-of-entry water filtration, and PFAS remediation or removal.

## Target Problems

PFAS removal represents a special challenge for water and wastewater treatments due to their unique chemical and physical properties. Current conventional materials suffer from several drawbacks including unsatisfactory sorption capacity, low removal efficiency for short-chain and emerging PFAS, difficulty in regeneration, and lack of needed removal selectivity.

## Key Features

- **High Efficiency** – Powdered materials exhibit higher adsorption efficiency even at low PFAS concentrations.
- **High Selectivity and Sensitivity** – Materials exhibit competitive adsorption.
- **Wide Applications** – Can be used to remove wide spectrum of PFAS materials.

## Technology

Inventors at University of Wisconsin, Milwaukee (UWM) have developed a class of novel and highly efficient powdered adsorbent materials based on layered double hydroxides (LDHs) amended with organic functionalities for the removal of a wide spectrum of PFAS materials. Adsorbent materials with a range of PFAS with different chain lengths (C4 – C14) and functionalities (e.g., perfluoroalkyl acids and precursors) were tested under environmentally relevant conditions like natural source waters (i.e., surface water, groundwater) and wastewater. The adsorbent material exhibited significantly improved adsorption capacity as compared to conventional materials and high material selectivity in the mixtures of various PFAS, conventional organic pollutants (such as pesticides, pharmaceuticals and personal care products, and other persistent organic pollutants), and natural organic matter (NOM).

## Intellectual Property

U.S Provisional Patent Application

## Inventors

Shangping Xu, Ph.D., Associate Professor, Department of Geosciences
Yin Wang, Ph.D., Associate Professor, Civil and Environmental Engineering

## Publications

XU, et al., "Comparison of Zn–Al and Mg–Al layered double hydroxides for adsorption of perfluorooctanoic acid", Chemosphere, 287 (3), 132297, 2022.

Please contact our office to share your business needs and Learn More.