

# ADSORPTION OF PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS) ON FLUORO-SORB® ADSORBENT

## ADSORPTION CAPACITY AT HIGH PFAS CONCENTRATIONS

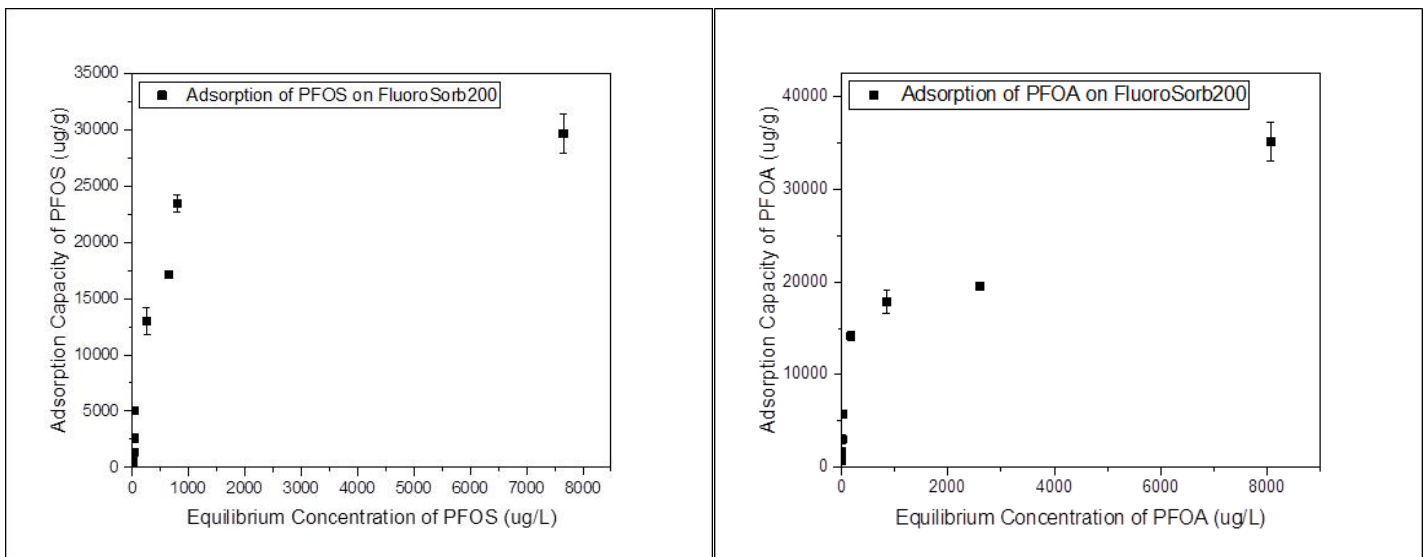
### Summary:

Dr. Jinxia Liu, McGill University, studied the performance of FLUORO-SORB® 200 adsorbent to sequester high concentrations of per- and polyfluoroalkyl substances (PFAS) from distilled/deionized (DI) water. The goal was to determine the adsorption capacity of Fluoro-sorb adsorbent at part per million (ppm) PFAS concentrations. Batch adsorption experiments demonstrated that Fluoro-sorb adsorbent has a high adsorption capacity for a variety of PFAS compounds, and that the adsorption capacity is a function of the starting PFAS concentration.

Solutions of DI water spiked with various concentrations of PFOS, PFOA, PFHxS, PFBS, 6:2 FTS, and FHxSA compounds were treated with 5 mg of media in 15 ml polypropylene centrifuge tubes and mixed in the dark at 150 rpm for 168 hours. The supernatant was then analyzed for the residual PFAS concentrations. A blank with no media was also prepared, and the adsorption capacity was determined using the blank for the starting PFAS concentration. The highest adsorption capacity for each PFAS compound at the associated starting concentration is shown in Table 1. The adsorption capacity of Fluoro-sorb adsorbent as a function of equilibrium concentration for each PFAS compound is shown in Figure 1 and Figure 2. Experiments were run in triplicate, and the results presented are mean values.

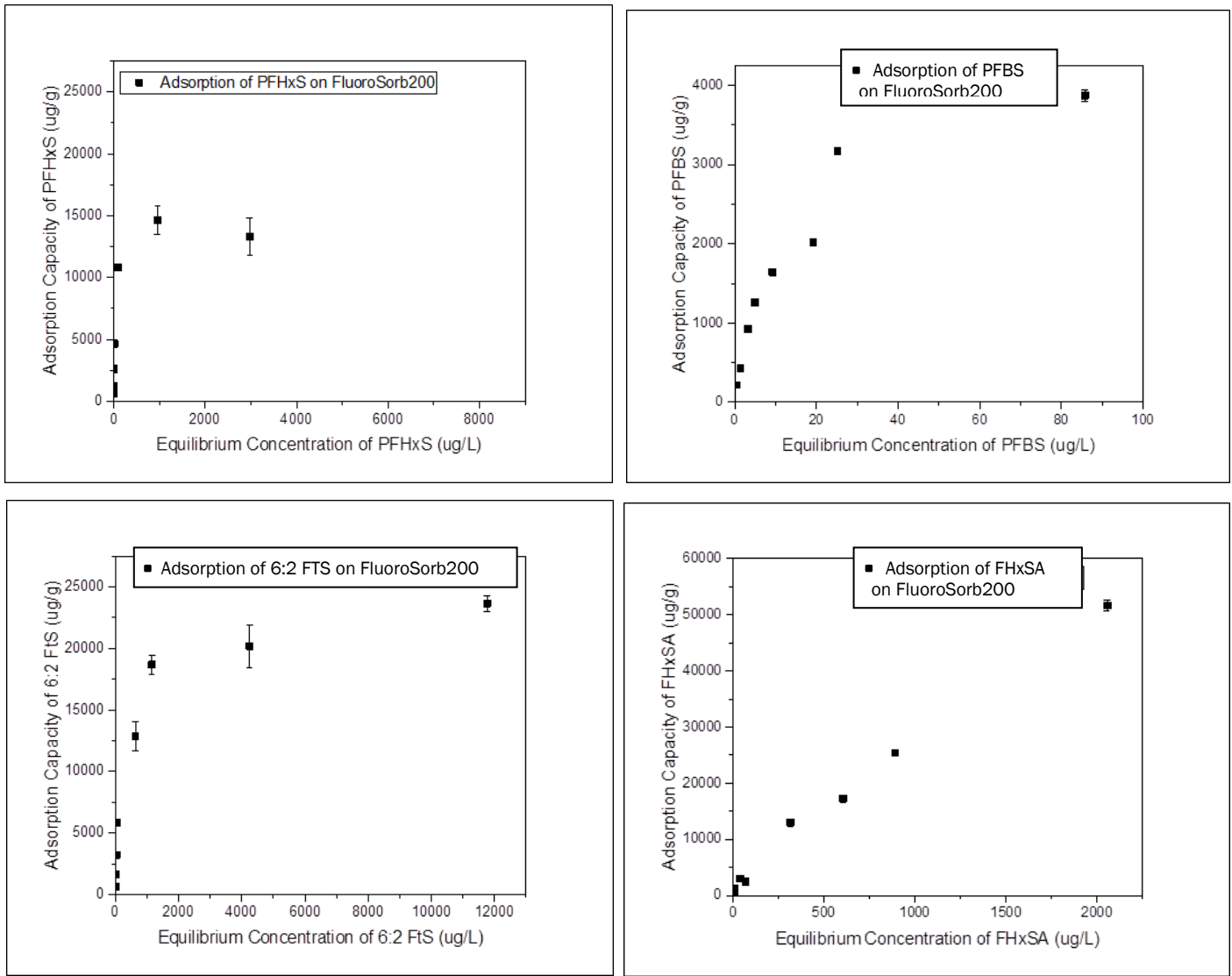
**Table 1: Highest adsorption capacity and starting concentrations for adsorption of PFAS on FLUORO-SORB® 200 adsorbent.**

PFAS Name	PFAS Acronym	Initial concentration (mg/L)	Adsorption Capacity (mg/g)
Perfluorooctanesulfonic acid	PFOS	17.5	29.6
Perfluorooctanoic acid	PFOA	19.8	35.1
Perfluorohexanesulfonic acid	PFHxS	7.42	13.3
Perfluorobutanesulfonic acid	PFBS	1.38	3.9
6:2 Fluorotelomer sulfonic acid	6:2 FTS	19.6	23.6
Perfluorohexanesulfonamide	FHxSA	19.3	51.6



**Figure 1: Adsorption capacity of FLUORO-SORB® 200 adsorbent for PFOS and PFOA for equilibrium concentrations up to 8 mg/L of each PFAS.**

# TECHNICAL REFERENCE (FS-104)



**Figure 2: Adsorption capacity of FLUORO-SORB® 200 adsorbent for PFHxS, PFBS, 6:2 FTS, and FHxSA for equilibrium concentrations up to 12 mg/L of each PFAS.**

**Reference:** Yan, B., Wang, J., Liu, J. (2021) "STXM-XANES and computational investigations of adsorption of per- and polyfluoroalkyl substances on modified clay", *Water Research*, 201, 117371.