AESF Research Grant - G2429
Q2, 2023 Quarterly Report
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Summary: A new student was hired on this project and has spent time learning the experimental setup and appropriate methods. Considerable time was spent on developing a method for PFAS detection in our laboratory. A new catalyst was tested for 6:2 FTS oxidation and showed significantly higher removal than Ti_4O_7 alone.

Results: Figure 1 shows that concentration profile of 6:2 FTS at different potentials using the Bi_2O_3-SnO_2 catalyst (BTO) deposited on Ti_4O_7 (i.e., BTO/Ti_4O_7). At all potentials tested, the hydraulic residence time was ~ 11s and the reported removal was obtained in a single pass through the porous electrode. At 3.6 V/SHE, the removal rate was > 3-fold higher for the BTO/Ti_4O_7 compared to Ti_4O_7 alone. Furthermore, at 4.2 V/SH, > 90% removal of 6:2 FTS was observed using BTO/Ti_4O_7. However, we still are experiencing leaching of SnO_2 into the permeate solution at potentials ≥ 3.6 V/SHE. Work is underway to determine catalyst deposition methods to enhance the stability of the catalyst to achieve long term performance.

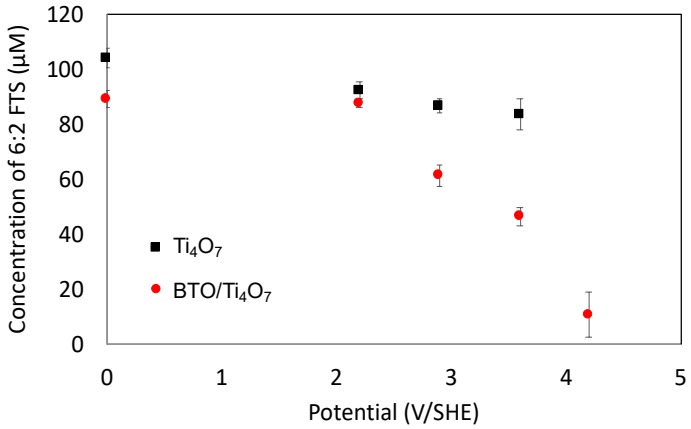

Figure 1: Concentration profile of 6:2 FTS (C_0 = 100 μM) as a function of potential.