Supporting information

Toward better understanding vacuum ultraviolet–iodide induced photolysis via hydrogen peroxide formation, iodine species change, and difluoroacetic acid degradation

Yang Yang, Qi Zhang, Baiyang Chen*, Liangchen Long, Guan Zhang

State Key Laboratory of Urban Water Resource and Environment, Harbin Institute of Technology (Shenzhen), Shenzhen, China

* Corresponding author. Phone: 86-134-8072-7605; Email: chen.baiyang@hit.edu.cn

Total pages: 10 including cover page

Number of figures: 9

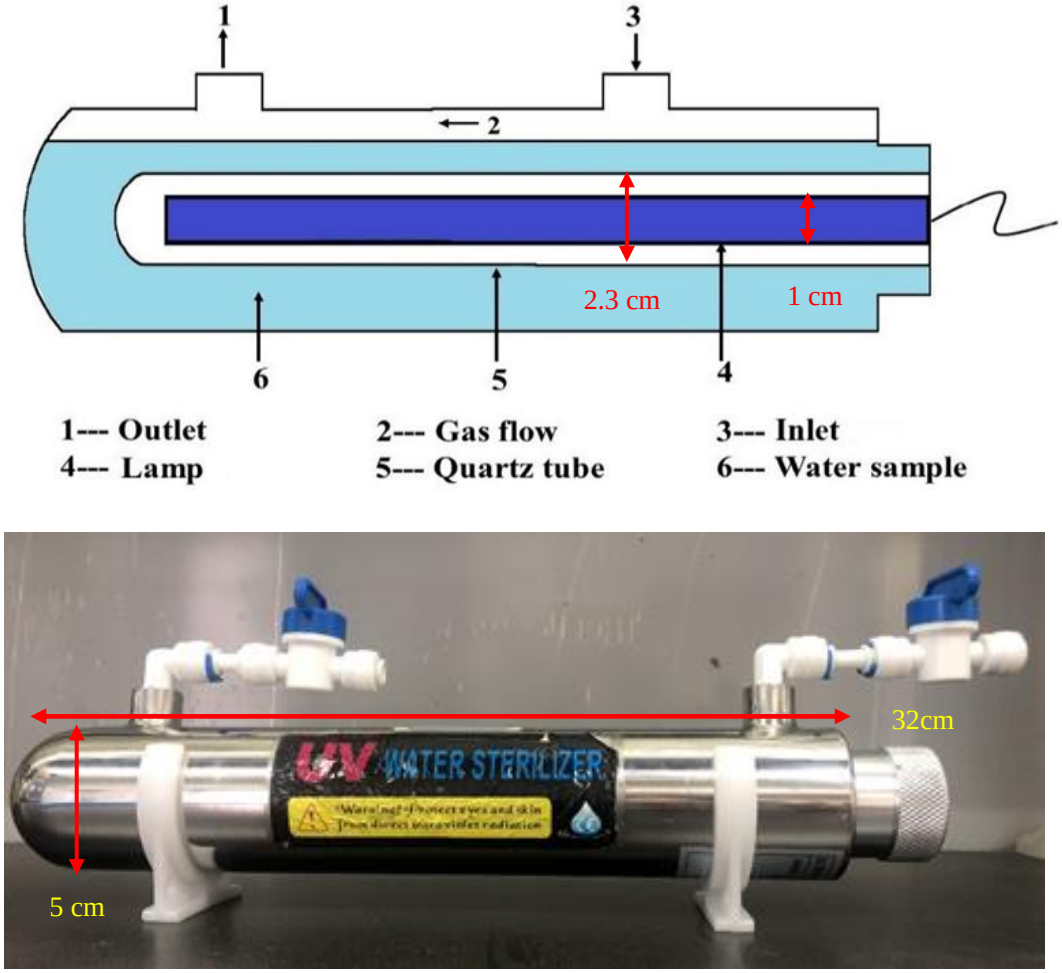

Figure S1. Diagram (top) and real picture (bottom) of the UV/VUV photoreactor used in this study.

The reactor was placed horizontally. Outlet (1) was used for samples retrieving. Inlet (3) was used for purging N_2.

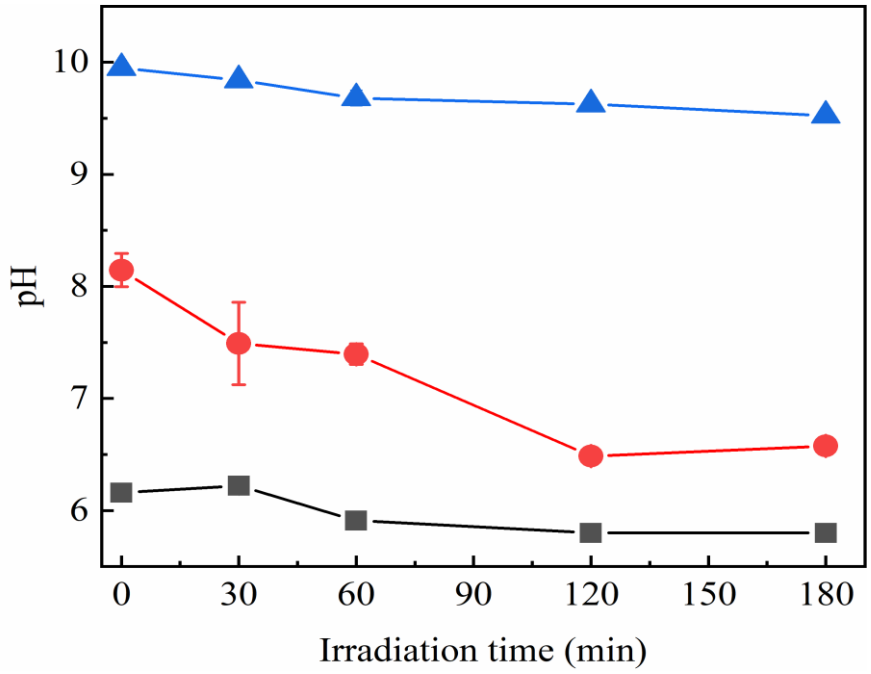

Figure S2. The changes of pH during the UV/VUV/I^- process under different initial pH levels.

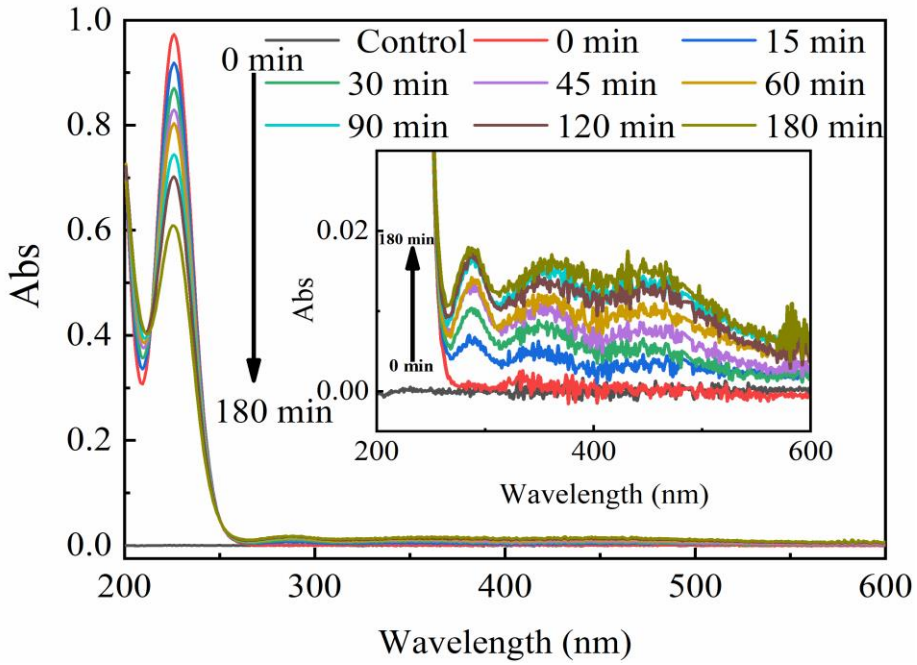

Figure S3. The changes in UV spectra for 10.0 mg/L of I^- irradiated by UV/VUV (DO = 8.5 mg/L, initial pH = 6.0 with no buffer used).

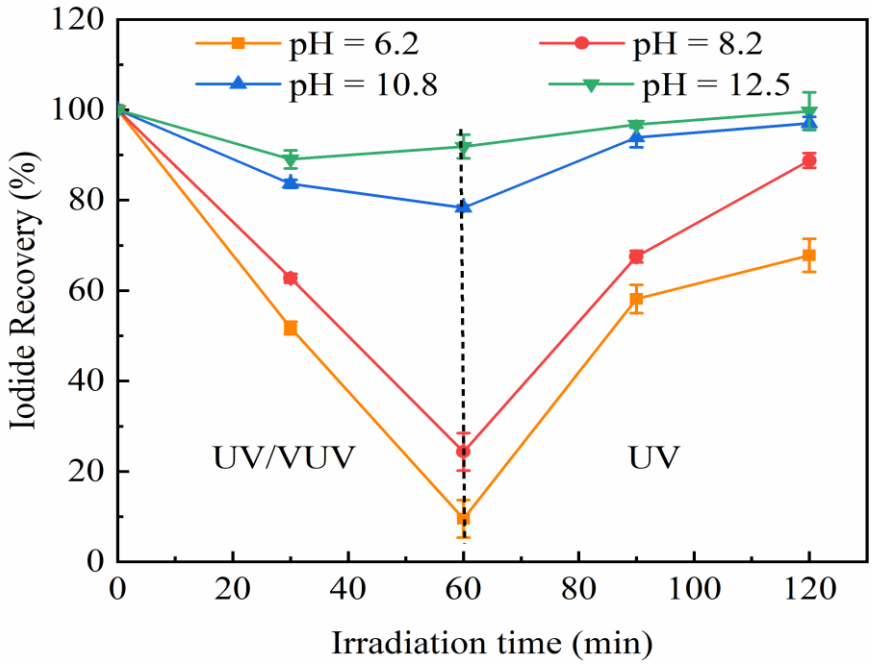

Figure S4. Effects of pH on iodide removal and recovery in water irradiated by sequential UV/VUV and UV processes ($[I]_0$=1.0 mg/L, DO = 8.5 mg/L with no buffer used).

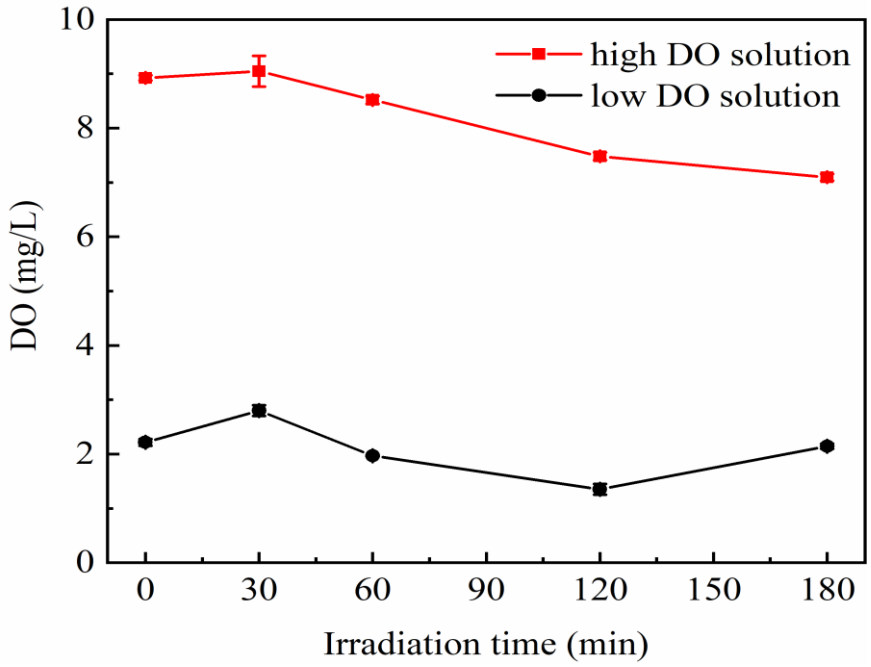

Figure S5. The changes of DO during the UV/VUV/I^- process under different initial DO levels.

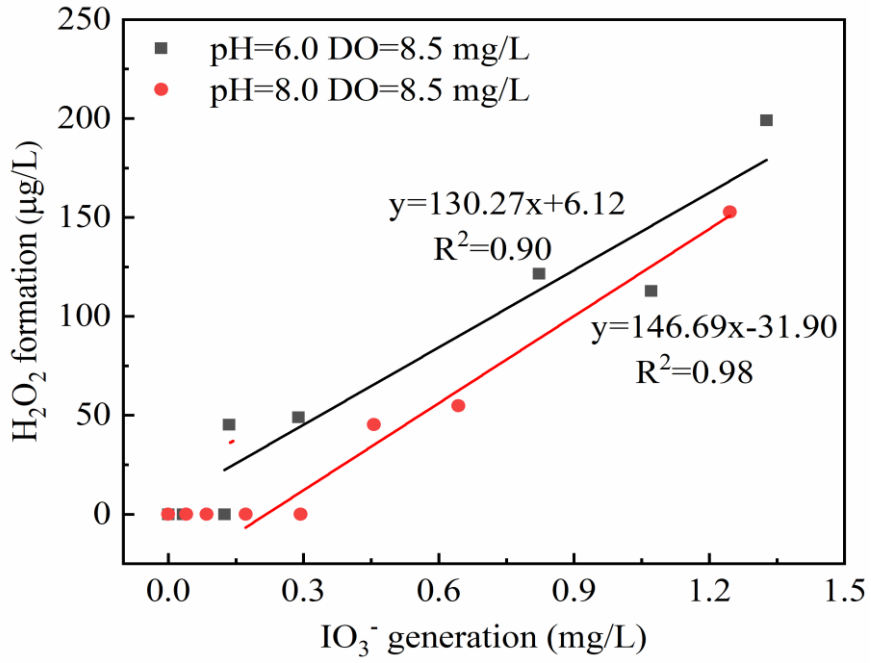

Figure S6. Correlations between H_2O_2 and IO_3^- formation levels during the UV/VUV/I^- process.

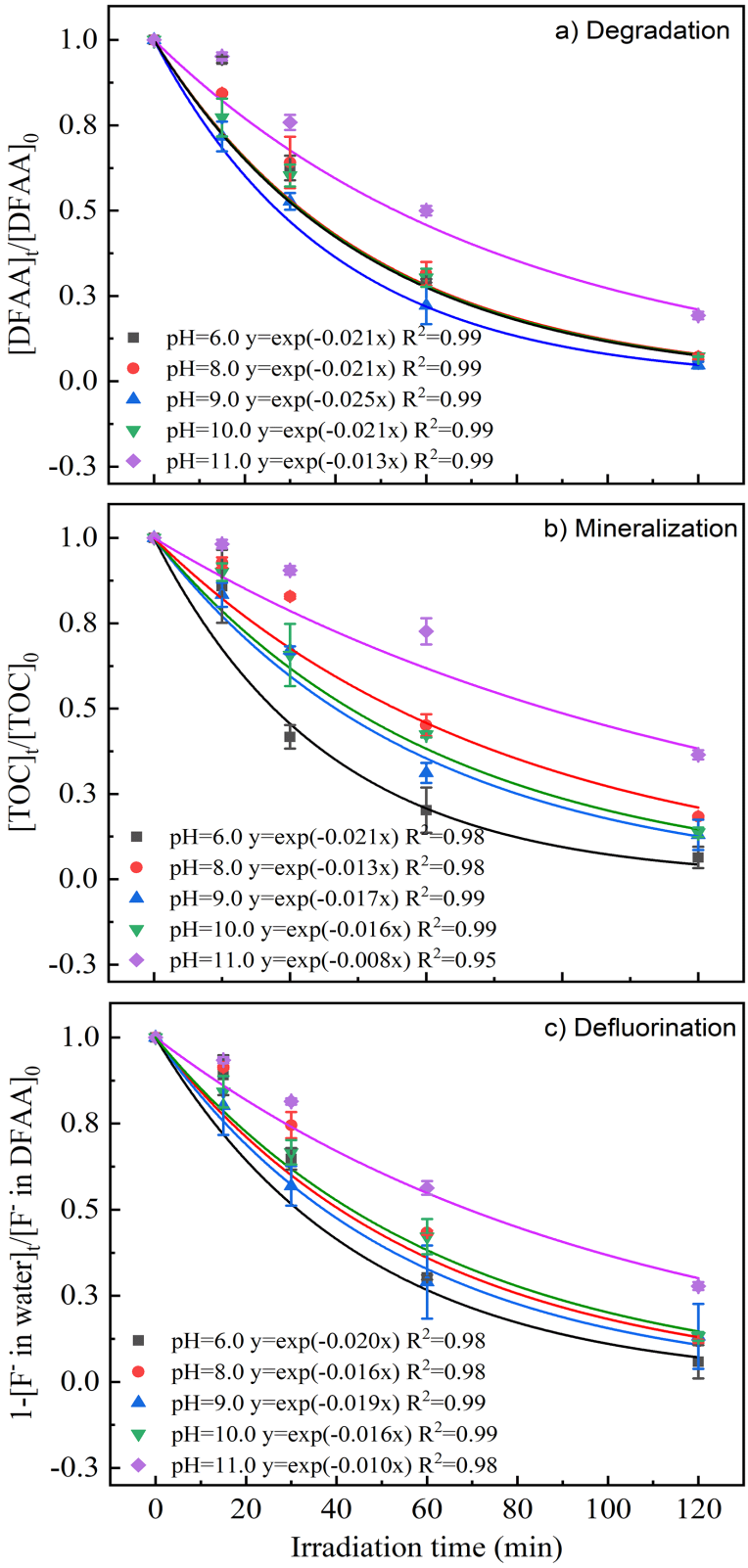

Figure S7. Effects of pH on the degradation a), mineralization b), and defluorination c) of DFAA during the UV/VUV/I^- process ($[I^-]_0$ = 1.0 mg/L, DO = 8.5 mg/L with no buffer used).

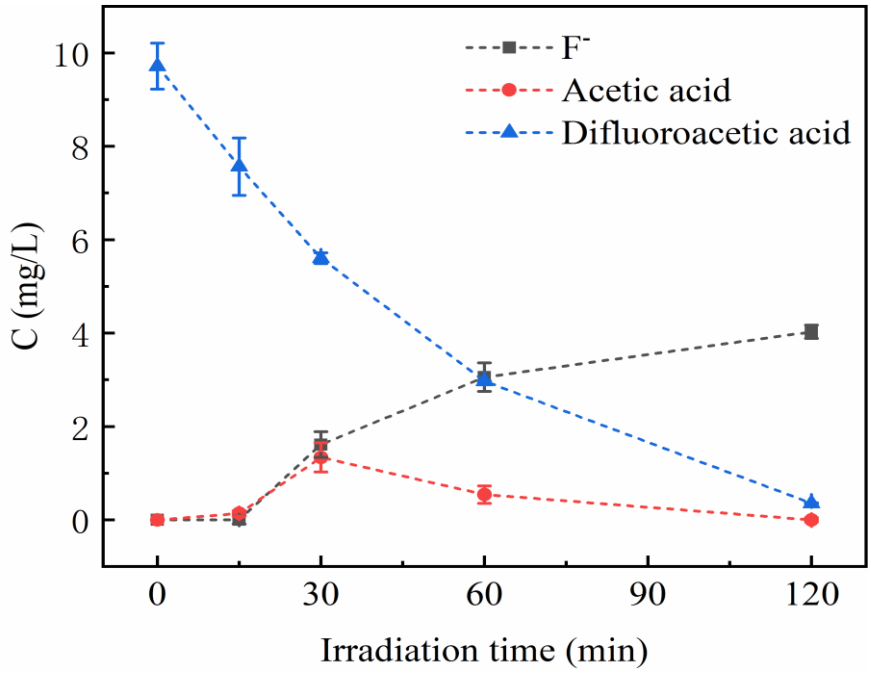

Figure S8. The F^-, acetic acid, and DFAA changes during UV/VUV/I^- photolysis under pH of 9.0 ($[I^-]_0$ = 1.0 mg/L, DO = 8.5 mg/L with no buffer used).

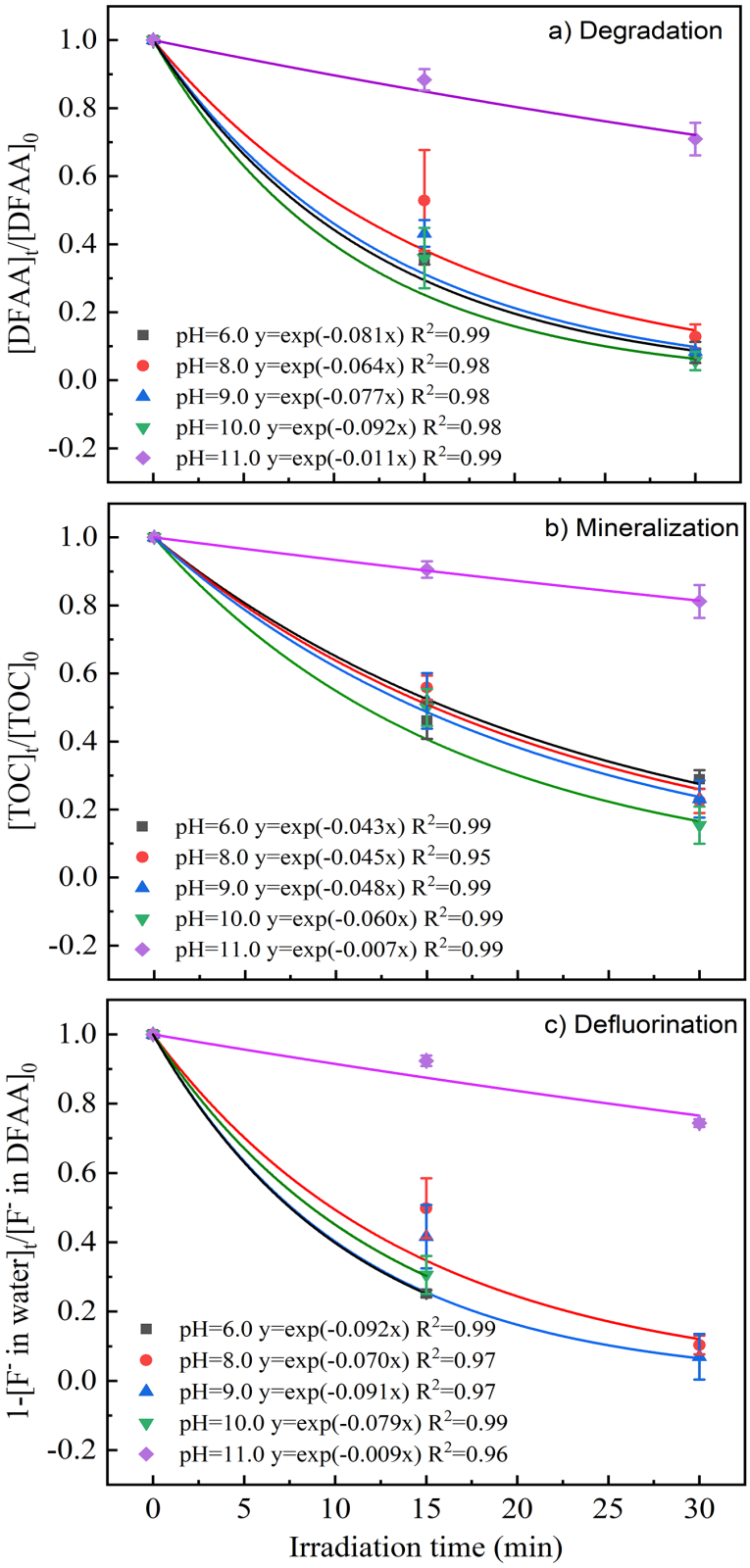

Figure S9. Effects of pH on the degradation a), mineralization b), and defluorination c) of DFAA during the UV/VUV process (DO = 8.5 mg/L with no buffer used).