

Abstract Submitted
for the GEC18 Meeting of
The American Physical Society

Plasma-derived Advanced Oxidation Dose Assessment of Modular Dielectric Barrier Discharge Plasma Reactor JOSEPH GROELE, JOHN FOSTER, Univ of Michigan - Ann Arbor — The abundant generation of hydroxyl radicals induced via plasma-water interaction is a promising, novel advanced oxidation technology for the treatment of challenging wastewaters that contain recalcitrant and emerging contaminants not removed by conventional wastewater treatment. Although plasma-driven advanced oxidation processes have successfully demonstrated removal of a wide range of contaminants in laboratory-scale reactors, the scale-up to high-throughput processing represents a technology development problem that must be solved to make practical plasma-based water treatment economically feasible. To facilitate scale-up, a modular approach involving multiple dielectric barrier discharge plasma applicators inserted into liquid cross-flow is developed to inject the required advanced oxidation dose for contaminant decomposition. The concentrations of hydrogen peroxide, ozone, and hydroxyl radicals transferred to the liquid as it passes the applicator are measured, and the performance is compared to traditional advanced oxidation processes.

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Date submitted: 04 Oct 2018

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