Development of an On-site Self-contained Electrochemical Wastewater Treatment System with Hydrogen Production

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Novel technologies are needed to address the sanitation needs of nearly 2.6 billion people worldwide. The main hurdles are the installation costs and continuous maintenance cost of the required facilities and the scarcity of water in many of the affected regions. Herein, we present a versatile stand-alone electrochemical treatment system that decontaminates wastewater on-site and generates hydrogen simultaneously.

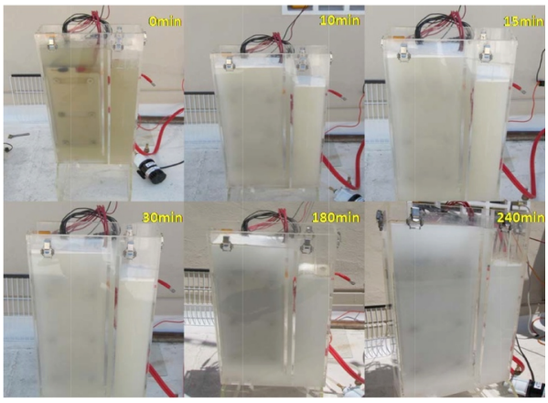

Fig. 1: Prototype-scale electrochemical wastewater treatment system. The influent collected from the San José Creek Water Treatment Plant in Los Angeles County (V=20L, $A_{electrodes}$= 1260 cm^2, C_{NaCl}= 50mM).

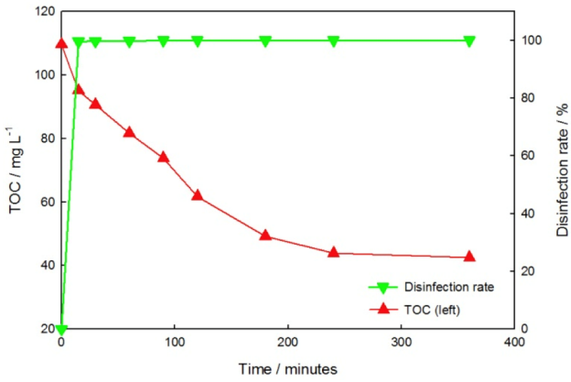

Fig. 2: Total organic carbon elimination progress and disinfection efficiency versus time in prototype-scale electrochemical treatment reactor.

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