

Fast Water Treatment by Silicon-Nanowire-Based Air-Water Sonolysis Systems

고동현, 최창호, 김동표[†]

POSTECH

(dpkim@postech.ac.kr[†])

The widespread presence of organic pollutants in water resources poses potentially grave health and environment problems. Oxidation processes, which involve in-situ generation of reactive oxidant species, are widely employed to treat and remove the pollutants. Even with the advanced oxidation processes (AOPs) that utilize energy sources and/or additives including catalysts, the treatment time is still too long and the energy efficiency is quite low. Here, we devise a self-activated sonolysis system with a superhydrophobic Si nanowire structure in microfluidic and millifluidic reactors, providing an air-water interfacial cavitation for efficient generation of OH radicals that is promoted by the structure itself without any additional energy inputs or additives.