

## **Ozonation treatment processes for the remediation of detergent wastewater: A comprehensive review**

### **ABSTRACT**

Laundry detergent wastewater is a potential renewable resource that can be recycled and reused in order to mitigate water scarcity. The treatment of laundry detergent wastewater is very challenging because of its multicomponent composition, large discharge volumes to the environment resulting from increasing usage of detergent as the global population grows, and ineffectiveness of conventional treatment technologies. Ozonation as one of the most effective advanced oxidation processes (AOPs) has shown tremendous potential in the treatment and reclamation of laundry detergent wastewater. Complete mineralization of the water contaminants by molecular ozone is not economical due to the high ozone generation cost and other limitations such as pH dependence, short lifetime of ozone, low ozone solubility in aqueous solution and mass transfer limitations. Strategies such as modification of ozonation processes including combination with hydrogen peroxide (peroxone process) and catalytic ozonation have received much attention. The effectiveness of the ozonation process can be further enhanced by photocatalytic ozonation resulting in higher rate of pollutants mineralization. This paper reviews the recent studies on ozonation treatment of surfactant containing laundry wastewater generated from various sources including domestic, industrial, commercial or public premises. Lastly, important remarks on the ozonation treatment of laundry detergent wastewater and suggestions for future works are presented.