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# Photocatalytic degradation of pefloxacin in water by modified nano-zinc oxide

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## ABSTRACT

Nanocrystalline La-doped ZnO powders were synthesized by homogeneous precipitation method and characterized by various sophisticated techniques such as XRD, UV-vis DRS and SEM. Experimental results show that the La-doped ZnO could make ZnO particle size decrease and make specific surface area large, so the photocatalytic activity of La-doped ZnO was increased compared with pure ZnO. The optimal conditions for maximum efficiency of pefloxacin degradation under 6 hours UV irradiation were found as 1 g/L dosage of La-doped ZnO nanocomposite, pefloxacin concentration of 15 mg/L, and pH=7.0. Under optimal operating conditions, degradation efficiency was reached to 93%.

*Keywords:*

Pefloxacin

La-doped ZnO

Photocatalytic degradation

## 1. Introduction

Pefloxacin belongs to quinolone antibiotics and it is widely used in health and breeding industry. As pharmaceutical wastewater, life sewage and aquaculture water discharged into the environment, which posed a serious threat to human health and ecology environment [1-4]. At present study of quinolone antibiotics photochemical degradation in water environment at home and abroad [5-7] was more published than pefloxacin degradation in water environment. So the study of pefloxacin degradation in water environment would be significant.

Semiconductor photocatalytic oxidation technology has several merits such as green, environmental protection and high efficiency, which draws great interests in the aspect of

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