

Photodegradation of m-cresol by Zinc Oxide under Visible-light Irradiation

Abstract

The photodegradation of m-cresol was carried out under visible light (46% sunlight) by ZnO as photocatalyst. To measure the efficiency of photodegradation, the different variables studied included amount of photocatalyst, concentration of m-cresol and pH. The maximum amount of photocatalyst and concentration of m-cresol was 1.5 g/L and 25 ppm respectively. The photodegradation was favorable in the pH 6-9 range. The detected intermediates were 2-methyl-1,4-benzodiol, 2-methyl-para-benzoquinone, 3,5-dihydroxytoluene and 2,5-dihydroxy-benzaldehyde. TOC studies show that 78% of total organic carbon is removed from solution during irradiation time. This study indicates the great potential of ZnO to remove aqueous m-cresol under visible-light irradiation which is part of sunlight.