



“Gheorghe Asachi” Technical University of Iasi, Romania



ENZYMATIC TREATMENT OF PHENOLIC INDUSTRIAL WASTEWATERS

Artun Sukan¹, Sait Sargin²

¹University of Westminster, London, U.K.; ²Ege University, Izmir, Turkey

Abstract

Phenol, as a pure substance, is used in many fields due to its disinfectant, germicidal, local anaesthetic and peptizing properties. Aqueous solutions of phenol are produced as a waste of these industries and are discharged into the environment. Therefore, elevated concentrations of phenol may be found in air or water due to industrial discharge or use of phenolic products. The aim of this study was to evaluate the phenol removal capability of enzymes from phenol containing (up to 5%) industrial wastewaters and to optimize the reaction conditions. For this purpose, two different enzymes namely, Laccase and Peroxidase were investigated with respect to their phenol removal capacities. The enzymatic reaction conditions were optimized using Response Surface Methodology (RSM). As a result 78% phenol removal was achieved with Laccase using a model wastewater. In the studies where the enzyme was immobilized, a 50% removal was achieved indicating that further optimization was needed in this area.
