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## ELECTROCHEMICAL DEGRADATION AND DETERMINATION OF PENTACHLOROPHENOL FROM WATER USING TiO<sub>2</sub>-MODIFIED ZEOLITE-CARBON COMPOSITE ELECTRODES

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### Abstract

In this study, TiO<sub>2</sub>-zeolite modified carbon nanotubes-epoxy (TiO<sub>2</sub>-Z-CNT-Epoxy) and TiO<sub>2</sub>-zeolite modified carbon nanofibers-epoxy (TiO<sub>2</sub>-Z-CNF-Epoxy) composite electrodes were applied for pentachlorophenol (PCP) degradation and determination in aqueous solution. The morpho-structural characterization of the composite electrodes was studied by scanning electron microscopy. The electrochemical behaviour of the electrodes was investigated under UV irradiation presence/absence, using cyclic voltammetry (CV) in 0.1 M sodium sulphate solution supporting electrolyte. The electrooxidation and photoelectrooxidation process under potentiostatic conditions were carried out using chronoamperometry (CA). A synergy effect at 1.5 V applied potential was observed for photoelectrochemical process in comparison with each electrochemical and photocatalytic one. The optimum operation conditions in relation with electrode type, and applied potential were established.

*Key words:* pentachlorophenol; photoelectrocatalytic activity; TiO<sub>2</sub>-zeolite-modified nanostructured carbon composite electrodes; wastewater

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