



**“Gheorghe Asachi” Technical University of Iasi, Romania**



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## DSA ELECTRODES FOR TREATING PHARMACEUTICAL EFFLUENTS

**Monica Ihos<sup>1\*</sup>, Carmen Lazău<sup>2</sup>, Florica Manea<sup>3</sup>**

<sup>1</sup>National Research and Development Institute for Industrial Ecology–ECOIND -Timisoara Branch  
1 Regina Maria Square, 300004 Timisoara, Romania

<sup>2</sup>National Institute for Research and Development in Electrochemistry and Condensed Matter  
Condensed Matter Department, 1 P. Andronescu Street, 300254 Timisoara, Romania

<sup>3</sup>“Politehnica” University of Timisoara, Faculty of Industrial Chemistry and Environmental Engineering  
6 Parvan Blvd., 300223 Timisoara, Romania

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### Abstract

In the last years many papers have reported about the occurrence of the pharmaceuticals in the surface waters and their undesirable effects upon the aquatic life. Most of pharmaceuticals pass through the wastewater treatment plants unchanged because they are biorefractory compounds and as a result they enter the water bodies. Therefore, it is necessary to improve the biodegradability of pharmaceuticals effluents (PhEs) before their discharge in the sewerage systems. The aim of this paper was the use of Dimensionally Stable Anodes (DSA) to improve the biodegradability of PhE containing diclofenac (DCF) as pharmaceutically active compound. The refractory character of PhE was found based on biochemical oxygen demand (BOD<sub>5</sub>)/chemical oxygen demand (COD) ratio (R) value of 0.05. The DSA electrodes were prepared by thermal decomposition of the appropriate precursors and had the composition Ti/RuO<sub>2</sub>-TiO<sub>2</sub>. Besides electrochemical experiments, photoassisted electrochemical, and combined photocatalytic and electrochemical experiments were carried out. The three DSA-based methods were effective for the biodegradability improvement of the PhE. The best result for R was 0.62, which was obtained for the combined photocatalytic and electrochemical method. These promising results regarding the biodegradability improvement of PhE should constitute the base for future detailed researches involving the DSA use for the wastewater treatment.

*Key words:* biodegradability, diclofenac, Dimensionally Stable Anodes, pharmaceutical effluent

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\* Author to whom all correspondence should be addressed: E-mail: monica\_ihos@yahoo.com; Phone.: +40356008221; Fax: +40356008220