



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



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## SYNTHESIS OF TITANIUM DIOXIDE WITH HYDROTHERMAL METHOD AND ANTIBACTERIAL ACTIVITY AGAINST *E. coli*

**Cornelia Bandas<sup>1,2</sup>, Corina Orha<sup>1</sup>, Corina Misca<sup>3</sup>, Sorin Olariu<sup>4</sup>, Carmen Lazau<sup>1\*</sup>**

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

<sup>2</sup>National Institute for Research and Development in Microtechnologies, Bucharest  
126A Erou Iancu Nicolae Street, 077190 Bucharest, Romania

<sup>3</sup>Banat's University of Agricultural Sciences and Veterinary Medicine of Timisoara, Faculty of Food Products Technology  
119 Calea Aradului, 300645 Timisoara, Romania

<sup>4</sup>Medical and Pharmaceutical University “Victor Babes”, 2 Eftimie Murgu Street, 300041 Timisoara, Romania

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### Abstract

A comparative study regarding the shape, dimension and bactericidal activity of the undoped and Ag-doped TiO<sub>2</sub> nanocrystals was achieved. In this way, two hydrothermal methods, classical hydrothermal and microwave-assisted hydrothermal, was used for nanoparticles synthesis. The obtained materials were investigated by X-ray diffraction, DRUV-VIS spectroscopy, BET and SEM/EDX analysis. Antibacterial activity of undoped and Ag-doped TiO<sub>2</sub> materials was tested on real water from Bega River. The best bactericidal activity was proved by using Ag-TiO<sub>2</sub> catalyst synthesized by microwave-assisted hydrothermal method, through damaging of *E. coli* colonies under visible irradiation.

*Key words:* antibacterial, *E. coli*, hydrothermal methods, titanium dioxide

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\* Author to whom all correspondence should be addressed: E-mail: [carmen.lazau@gmail.com](mailto:carmen.lazau@gmail.com)