



“Gheorghe Asachi” Technical University of Iasi, Romania



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## CHALLENGES AND OPORTUNITIES IN GREEN PLASTICS: AN ASSESSMENT USING THE ELECTRE DECISION-AID METHOD

Elena-Diana Comaniță<sup>1,2\*</sup>, Cristina Ghinea<sup>1,3</sup>, Raluca Maria Hlihor<sup>1</sup>,  
Isabela Maria Simion<sup>1</sup>, Camelia Smaranda<sup>1</sup>, Lidia Favier<sup>4</sup>,  
Mihaela Roșca<sup>1</sup>, Irina Gostin<sup>2</sup>, Maria Gavrilescu<sup>1,5\*</sup>

<sup>1</sup>“Gheorghe Asachi” Technical University of Iasi, Faculty of Chemical Engineering and Environmental Protection,  
Department of Environmental Engineering and Management, 73 Prof.dr.docent D. Mangeron Str., 700050 Iasi, Romania

<sup>2</sup>“Alexandru Ioan Cuza” University of Iasi, 11 Carol I Blvd., 700506 Iasi, Romania

<sup>3</sup>“Stefan cel Mare” University of Suceava, Faculty of Food Engineering, 13 Universitatii Str., 720229 Suceava, Romania

<sup>4</sup>Superior National School of Chemistry in Rennes, UMR CNRS 6226, Institute of Chemical Sciences Rennes,  
Department of Chemistry and Process Engineering, 11 Beaulieu Str., CS 50837, 35708 Rennes Cedex 7, France

<sup>5</sup>Academy of Romanian Scientists, 54 Splaiul Independentei, RO-050094 Bucharest, Romania

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### Abstract

Bioplastics are biobased materials, usually easy biodegradable, derived from renewable resources. Evolution of bioplastics production is related to: bio starch and starch mixtures (74.5%); bioplastic products from fermentation (13%), bioplastic from petrochemicals materials (12.5%). They are seen as a viable solution to avoid some environmental impacts caused by the use of fossil-based conventional plastics. In this context, the general objectives of this study entail the analysis and selection of the optimal alternative of bioplastics able to be used for packaging production, considering social, economic and environmental criteria. In order to accomplish these objectives, we applied the ELECTRE method (*ELimination Et Choix TRaduisant la Realité*), a multi-criteria analysis method. Application of this method enables the use of qualitative and quantitative discrete criteria, making also possible alternatives ranking. The application of ELECTRE method in our study consisted in selecting different types of bioplastics which were compared considering some consistent criteria so as to assess their economic and environmental performances. Based on the application of multiple criteria evaluation we concluded that bioplastics, in particular polyhydroxyalkanoates (PHAs) are suitable from economic and environmental points of views for manufacturing and utilization of packaging.

*Key words:* bioplastic, indicators, ELECTRE method, multi-criteria analysis, polyhydroxyalkanoates

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\* Author to whom all correspondence should be addressed: e-mail: comanita\_elena\_diana@yahoo.com; mgav@tuiasi.ro