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Enzymatic reactions in the production of biomethane from organic waste

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Abstract

Enzymatic reactions refer to organic reactions catalyzed by enzymes. This review aims to enrich the documentation relative to enzymatic reactions occurring during the anaerobic degradation of residual organic substances with emphasis on the structures of organic compounds and reaction mechanisms. This allows to understand the displacement of the electron between electron-rich and electron-poor entities to form new bonds in products. The detailed mechanisms of enzymatic reactions relative to the production of biomethane have not yet been reviewed in the scientific literature. Hence, this review is novel and timely as it discusses the chemical behaviour or the reactivity of different functional groups, thereby allowing to better understand the enzymatic catalysis in the transformations of residual proteins, carbohydrates, and lipids into biomethane and fertilizers. Such understanding allows to improve the overall biomethanation efficiency in industrial applications.

Biography

Topwe Mwene-Mbeja currently works as a professor of organic chemistry at the Department of chemistry, Faculty of Science, University of Lubumbashi, D.R. Congo. He received Ph.D. in Organic chemistry at Laval University, Quebec, Canada. He is a member of the association of graduates of Laval University. He is also a member of University of Manitoba Alumni Association, Manitoba, Canada, and a Representative of Lubumbashi University to Canadian Universities. Topwe Mwene-Mbeja does research in Medicinal Chemistry, Organometallic Chemistry and Organic Chemistry. His group is interested in the discovery of biologically active natural products possessing properties against cancer. His group is also interested in green chemistry projects related to the prevention of pollution of the environment and sustainable development.

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