



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



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*Session 3*

***BIOLOGICAL TRANSFORMATION OF CONVENTIONAL AND BIOBASED  
POLYMERS IN THE ENVIRONMENT***

*Main lecture*

**BIOPLASTICS SCIENCE FROM A POLICY VANTAGE POINT**

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**Abstract**

Society is fundamentally ambivalent to the use of plastics. On the one hand, plastics are uniquely flexible materials that have seen them occupy a huge range of functions, from simple packing materials to complex engineering components. On the other, their durability has raised concerns about their end-of-life disposal. When that disposal route is landfill, their invulnerability to microbial decomposition, combined with relatively low density and high bulk, means that plastics will occupy increasing amounts of landfill space in a world where available suitable landfill sites is shrinking.

The search for biodegradable plastics and their introduction to the marketplace would appear to be a suitable amelioration strategy for such a problem. And yet the uptake of biodegradable plastics has been slow. The term biodegradable itself has entered public controversy, with accidental and intended misuse of the term; the intended misuse has led to accusations and instances of “greenwashing”. For this and other reasons standards for biodegradability and compostability testing of plastics have been sought. An environmental dilemma with more far-reaching implications is climate change. The need for rapid and deep greenhouse gas (GHG) emissions cuts is one of the drivers for the resurgence of industrial biotechnology generally, and the search for bio-based plastics more specifically. Bio-based has come to mean plastics based on renewable resources, but this need not necessarily imply biodegradability. If the primary purpose is GHG emissions savings, then once again plastics durability can be a virtue, if the end-of-life solution can be energy recovery during incineration or recycling. The pattern of production is shifting from the true biodegradable plastics to the bio-based plastics, and that trend is likely to persist into the future.

This paper looks at aspects of the science of biodegradable and bio-based plastics from the perspective of policy advisers and makers. It is often said that the bioplastics suffer from a lack of a favourable policy regime when compared to the wide-ranging set of policy instruments that are available on both the supply and demand side of biofuels production. Some possible policy measures are discussed.

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