Organic Chemistry: An Indian Journal

Organic Chemistry
ISSN: 0974-7516

Review | Vol 15 Iss 2

Plastic Waste Valorisation-Editorial

Amelia Hawking*

Editorial office, Trade Science Inc., UK

***Corresponding author:** Amelia Hawking, Editorial office, Trade Science Inc., UK, E-mail: hawkss_a@hotmail.com

Received: January 15, 2021; **Accepted:** February 14, 2021; **Published:** February 21, 2021

Editorial

Wastes are considered useful feedstock in the circular economy, since they can be used to make fertilisers, fuels, chemicals, and a range of materials for packaging, housing, transportation, and clothing. Plastics are responsible for a significant portion of the waste generated by our society today, which is a major issue. Plastics are typically synthetic polymers that are resistant to decomposition and, as a result, are prone to accumulating in landfills or the atmosphere when they are discarded. Since not all plastics can be reused, their economic value is reduced. Plastics have the potential to release toxic chemicals that are harmful to human health and the environment. Plastic products are pervasive in our daily lives, accounting for about 360 million tonnes of global plastic production in 2018, of which more than 60% were discarded. As a result, plastic contamination is important, resulting in microplastics being deposited in soil, seas, crustaceans, and rain.

Plastic waste valorisation by chemical conversion into reusable building blocks could help address these issues while also lowering the chemical industry's carbon footprint. The method deepens the principle of plastic recycling by necessitating, first and foremost, the careful design of effective and regulated depolymerization processes. Despite this stumbling block, implementing successful plastics value chains based on recovery, reprocessing, and upgrading will be a tangible way to transform a problem into an opportunity. For animal and plant biomass polymeric waste, where mature technologies are available, a waste-to-products strategy is already in place. When talking about polymers in general, there aren't always specific meanings, which can lead to confusion between terminologies that are used interchangeably but aren't. The IUPAC recommendations are a good guide for this goal. As a result, "degradation" is a general term that refers to the "progressive loss of a substance's performance or characteristics" as a result of chemical (acids, air, halogens, solvents) or physical agents (heat, light). Tensile strength, colour, and form are examples of polymer properties that can be altered by changing the chemical composition (e.g., as a consequence of oxidation, cross-linkage, bond cleavage). Biodegradation is described as "degradation caused by enzymatic processes as a result of cell action." While the term "biodegradable" is sometimes used to refer to artificial polymers, it refers to biorelated polymers (i.e., proteins, nucleic acids, and polysaccharides) that are "susceptible to degradation by biological activity by lowering of macromolecule molar masses". As a result, the terms "chain cleavage" and "degradation" are interchangeable in this context. To avoid ambiguity, we used the word "depolymerisation" instead of biogradation to describe the "process of transforming a macromolecule into (recoverable) monomers or a mixture of monomers" in this editorial. Another useful term is "bioplastic," which means "biobased polymer derived from biomass or issued from biomass monomers," where "biobased" means "composed or derived in whole or in part from biological products issued from biomass." Furthermore, since different issuers define "compostable" differently, there is no widely accepted

term. The European Commission's EN 13432 report defines "Packaging-Requirements, packaging recoverable by composting and biodegradation" also defines standards such as disintegration (i.e., material breakdown into defined-size particles), biodegradability, and the absence of negative effects.

The word "recycling" is a broad term with a variety of meanings that vary by year and author. Manufacturers of plastics have also released their own set of guidelines, dubbed "Design for Recycling." “The method of recovering scrap or waste plastics and reprocessing the material into usable items, often entirely different in shape from their original state,” according to a widely accepted concept of plastic recycling. Breakdown by recycled polymer, finished product, or process further differentiates between approaches, which can lead to occasional overlaps and inconsistencies.