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über

Application of Optical Spectroscopy in Plastic Waste Recycling

Abstract:

Plastic waste consists of various types of used products and materials made from synthetic polymers. Undoubtedly, polymer products have numerous advantages related to the material's properties and the economic benefits of their use. However, polymer materials are extremely difficult to biodegrade, which negatively impacts the environment. Therefore, there is an urgent need for effective methods of extracting and recycling different types of plastics from household and industrial waste for further use.

The goal of this talk is to provide an overview of four main spectroscopic methods: infrared (IR) spectroscopy, laser-induced breakdown spectroscopy (LIBS), laser-induced fluorescence (LIF) spectroscopy, and Raman spectroscopy, which are ideal for identifying and sorting plastics due to their speed, specificity, and minimal human involvement in everyday practice. The current state of these spectroscopic methods' application and their potential for developing an industry-oriented plastic sorting system for recycling plastic waste are discussed.