

Development of Additives for Tailoring the Degradation of Polylactic Acid

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Polylactic acid (PLA) has emerged as one of the most promising bio-based and biodegradable polymers for sustainable plastic applications. However, its degradation behavior remains highly dependent on environmental conditions, and its relatively slow degradation rate under natural conditions remains a major limitation for broader utilization. This presentation highlights recent advances in the development of bio-based additives for manipulating the degradation behaviour of PLA. The study includes the use of oligoricinoleic acid (ORA), a renewable-resource-derived additive, to enhance the flexibility and accelerate the degradation of PLA [1], as well as investigations into the degradation behavior of PLA/thermoplastic starch blends under seawater conditions. In addition, the synthesis and effect of benzoxazine dimer on the degradation of PLA will also be discussed. These works highlight versatile additive engineering approaches for tailoring the degradation of PLA.

References [1] P. Kaewruksa, A. Lertworasirikul (2024). *Polymer-Plastics Technology and Materials*, 63(13), 1723–1732 (2024).

Biography (For Plenary, Keynote, and Invited Speakers)

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Personal History:

Amornrat Lertworasirikul is an Assistant Professor in the Department of Materials Engineering, Faculty of Engineering, Kasetsart University. She received her Bachelor of Science in Materials Science and Master of Science in Polymer Science from Chulalongkorn University, Thailand. She earned her Doctor of Engineering in Biotechnology and Life Science from Tokyo University of Agriculture and Technology, Japan. She previously served as a Specially Appointed Assistant Professor at the Department of Applied Chemistry, Graduate School of Engineering, Osaka University, where she researched the synthesis and development of polylactic acid-based materials.

Her research interests include bio-based polymers, biodegradable plastics, polymer additives, polymeric biomaterials, and sustainable polymer engineering.

Research Keyword (3-5 keywords use commas to separate each word):

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