

A Cradle-to-Cradle Approach to Bio-renewable Plastics

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Project Location:

University of Rhode Island-Kingston

Project Description:

This proposal seeks to develop new, more effective, chemical recycling methods and new materials which will lessen environmental damage; this constitutes a change in human behavior. The goal of this project is to develop, from renewable resources, plastics that are fully biodegradable and infinitely recyclable in a cradle-to-cradle fashion. Plastics are entering the ocean at alarming rates, causing considerable damage to points of entry, like Narragansett Bay. Recycling plastic waste is one option to mitigate the damage from these materials; however, recycling rates are very low, and conventional recycling technology often results in downgraded material whose journey to the landfill is only delayed. Despite the problems associated with plastics, humanity's rate of plastic production continues to grow. Solving the plastic problem is of vital importance to Rhode Island and its 400 miles of coastline, and we seek to develop comprehensive approaches to mitigate plastic waste at every chance that it may accumulate. We will use fundamental studies of catalysis and materials science as our primary tools to develop catalytic methods of depolymerization to regenerate monomer that can be used for the generation of new plastic, as opposed to virgin feedstocks.

*This project involves **primarily lab or computer work***

Required/preferred skills for student applicant:

Completion of organic chemistry 1 and 2 and the associated laboratory course(s).

Student transportation needed for project?

No