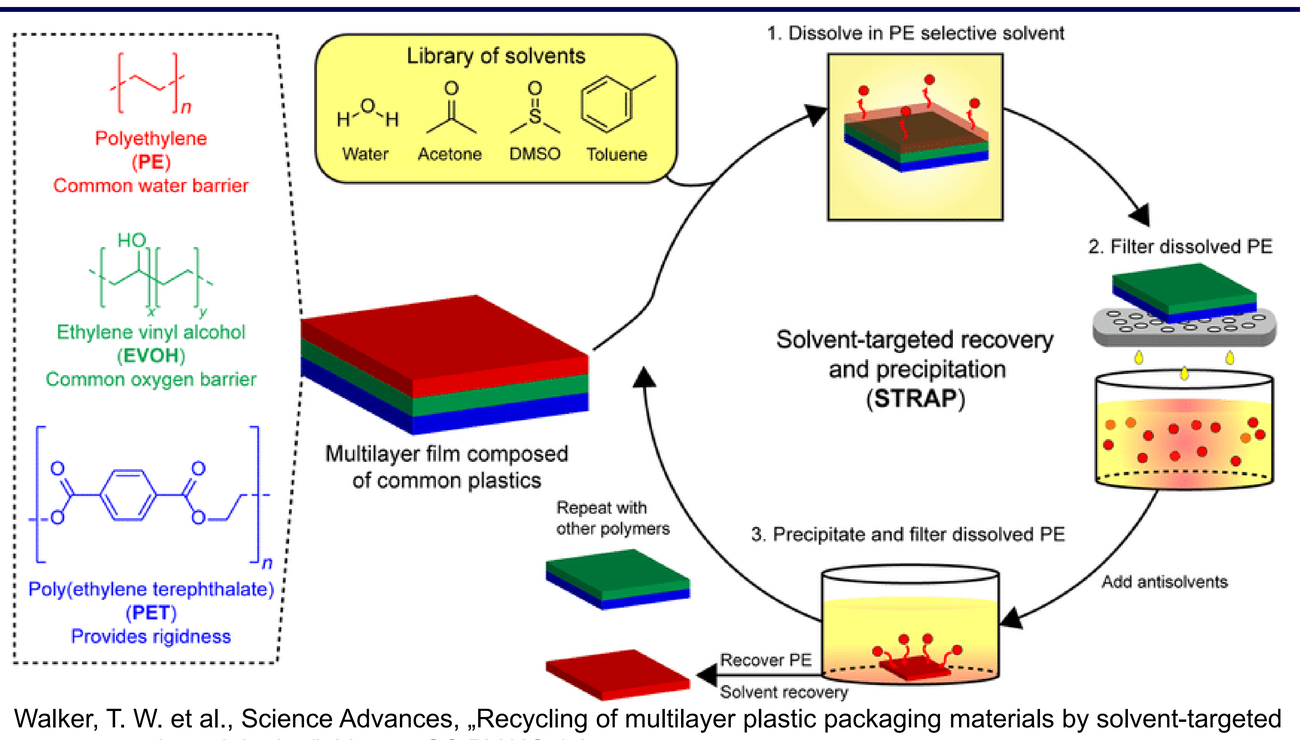
Bachelor´s thesis or Project work:
Approaches to solvent-based recycling of multilayer foils

Particle Processing Group, Institute of Interfaces and Particle Technology (IPT)

Motivation

Multilayer foils are widely used in packaging because they offer excellent barrier, stability, and processing properties thanks to the combination of different materials (e.g., polyethylene (PE), polyamide (PA)). At the same time, they pose a major challenge for recycling because the layers are difficult to separate from each other.



Walker, T. W. et al., Science Advances, „Recycling of multilayer plastic packaging materials by solvent-targeted recovery and precipitation“, Lizenz: CC BY-NC 4.0

A promising approach to solving this problem is solvent-based recycling, which enables the material recovery of high-quality polymers through the selective dissolution of individual components. This process offers the potential to make the material cycle in the packaging sector significantly more sustainable.

Mission and Profil

The Particle Processing Group at the Chair of Interfaces and Particle Technology focuses on the development, processing, and characterization of particulate materials. A current research focus is on the development of sustainable strategies to promote circular economy and resource-saving recycling processes.

As part of this work, a literature review of existing solvent-based recycling processes for multilayer films will be conducted. The aim is to identify suitable solvent systems and process strategies and to evaluate them in terms of environmental compatibility, economic efficiency, and technical feasibility. Based on the findings, an experimental part can then be carried out in which selected systems are tested and characterized in the laboratory.

We offer you the opportunity to work on a current and application-oriented topic in a forward-looking field of research closely related to sustainability and materials science. We expect you to work independently and precisely, to be interested in polymer technology issues, and to be willing to familiarize yourself with complex topics.

Summary

- Research into innovative and future-oriented technologies
- Exciting and diverse topics with an interdisciplinary character
- Independent work with the opportunity to realize your own ideas

Contact

Please send inquiries to

Maximilian Bork, M.Sc.

Particle Processing Group
Institute of Interfaces and Particle Technology
Cauerstraße 4
91058 Erlangen

Email: maximilian.bork@fau.de
Phone: 09131 – 85 29429
Room: 0.322

Website: http://www.ppg.forschung.fau.de http://www.ipt.fau.de