Chemical recycling of polyurethane foams

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The global production of plastics has risen sharply from two million tonnes in 1950 to 450 million tonnes today, because plastic is a light, cheap and versatile material and is therefore used in many areas, from construction and household to medicine, packaging, etc. At present, not all plastic waste can be recycled, incinerated or landfilled, so more and more of it ends up in the environment, which has become a problem of our society. For this reason, there is a strong focus on improving the recycling rate of plastic waste. So far, mechanical recycling of plastic waste is the most developed, but it is not suitable for all types of plastic. An alternative to mechanical recycling is chemical recycling, which enables the production of raw materials that can be used as substitutes for petrochemicals.

The presentation will focuse on the chemical recycling of polyurethane (PU) foams, which have a cross-linked structure and are therefore not suitable for mechanical recycling. PU foams can be chemically degraded by different metods (glycolysis, hydrolysis, aminolysis, hydrogenolysis, amonolysis) to recover polyether polyols [1–3]. In this presentation we will discuss the advantages and disadvantages of the individual recycling methods for PU foams.

References

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