

Resource Circulation

R&D Project Title : Resource circulation of materials with electron-responsive core blocks

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Summary :

Current polymer materials (plastics) have low chemical recyclability due to the emphasis on their intended functionality, and many of them are incinerated, which is a source of greenhouse gas emissions. Although technologies exist to decompose these polymeric materials, the decomposition method itself has limitations such as the generation of greenhouse gases and large energy consumption.

Global demand for plastics will reach approximately 2.5 billion tons by 2050, and "if" all of this were to be thermally recycled, it would emit approximately 7.5 billion tons of CO₂. To solve and mitigate this problem, energy-saving decomposition methods for polymeric materials must be developed.

In this study, we will develop **a core block that can be easily degraded by electronic stimuli**, and by incorporating it into general-purpose polymers, we will develop a technology to add chemical recyclability to many polymer materials currently in use. This series of resource recycling technologies is defined as "**Core Block Technology (CoreTech)**" and will be established in this study, aiming for carbon neutrality.

