TURNING CARBON DIOXIDE INTO USEFUL PLASTICS

CARBON DIOXIDE: THE PROBLEM

Levels of carbon dioxide in our atmosphere have reached an all-time high. In addition to methods of reducing emissions, it's also important that we find ways of utilising the waste carbon dioxide present in our environment.

One way of doing this is to use catalysts to incorporate carbon dioxide in plastics which can then be used for a range of purposes.

![Chemical structures](image)

Catalysts facilitate reaction between carbon dioxide and small reactive molecules called epoxides. This reaction makes a long chain of \((n)\) repeat molecules called a copolymer, which are used to make plastic products. Captured waste carbon dioxide can be used as a starting point, and up to 40% of this used is incorporated into the final polymer.

The most prevalent application of the polymers produced by this method is incorporating them into polyurethanes.

Polyurethanes are a family of plastics which have a range of applications, including in memory foam mattresses, house insulation, the soles of trainers, and sports equipment including football coatings. Using this method makes production of these polyurethanes more environmentally sustainable.

WHY DOES THIS RESEARCH MATTER?

By incorporating waste carbon dioxide already present in our environment into everyday plastics we can increase our environmental sustainability and decrease our dependency on fossil fuels.

Based on research and materials provided by Econic Technologies: Catalysts for Polymerisation