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SELF-DISPOSING MATERIALS GIVE HOPE FOR A TRASH-FREE FUTURE

 SUSTAINABILITY

A new research from the Technical University of Munich is focusing on materials that will ‘self-destruct’ at the end of their usefulness.

Waste disposal not only pollutes in itself, it also consumes a great deal of energy. This is true also for recycling, where often a lot of heat energy is required to break down waste into its reusable parts. “So far, most man-made substances are chemically very stable: to decompose them back into their components, one has to spend a lot of energy,” explains Job Boekhoven, professor of Supramolecular Chemistry at the [Technical University of Munich \(TUM\)](#).

Now a team of chemists, physicists and engineers led by Job Boekhoven is working on materials that will simply disappear after use. They will use molecular building blocks and create substances that only hold their form when ‘fed’ with energy. This makes them analogous to biological forms like our own bodies. The amount of ‘fuel’ you feed the materials determines their lifespan. If you want to extend the lifespan of a particular material, you just have to give it more energy. In the laboratory the team has so far developed supramolecular materials that can be set to autonomously degrade at a predetermined time opening the door to various applications in the future.

At the moment the [research](#) is focusing on medical uses for the technology, with drug delivery materials or implants in mind. However, in theory this approach could be extended to packaging and products. Asked whether it would be possible to use the new tech to build machines that would

biodegrade after use, Boekhoven replied, “This might not be completely impossible but there is still a long way to go. Right now we are working on the basics.”

Easily degradable materials are big business and this year we’ve already seen talk of a **biodegradable car** and a **disposable BBQ**. Which product would you most like to see disappear when you were finished with it?

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