

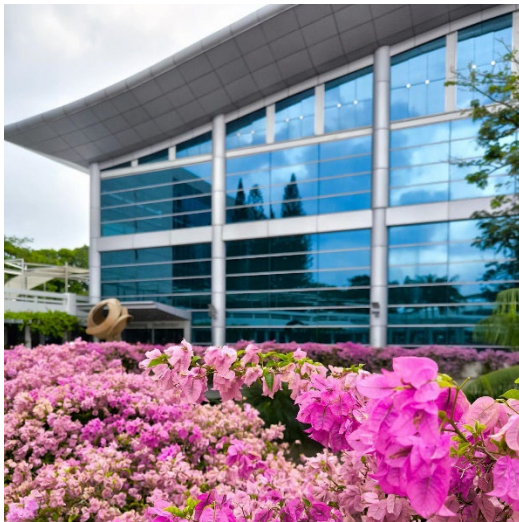
13 January 2025

Simone Galdi

Translated from Italian

Plastic and innovation, safe recycling is possible with the new discovery of NTU

An innovative method for removing toxic flame retardants from plastic waste promises to revolutionise recycling



Researchers at Nanyang Technological University (NTU) in Singapore have developed an innovative method to remove brominated flame retardants (BFRs) from plastics before recycling. This breakthrough represents a step toward safer treatment of e-waste, reducing the environmental and health risks associated with these toxic substances.

Recycling – Brominated flame retardants, chemicals used to prevent fires, are commonly found in devices such as laptops, keyboards, and smartphones. However, their environmental and health impacts are significant: once in landfill, they can leach into the soil and contaminate groundwater. Additionally, during recycling processes that involve heating plastics, these substances can be released into the air, increasing the risk of exposure for workers and the environment.

Innovation – A team led by Associate Professor Lee Jong-Min at NTU's School of Chemistry, Chemical Engineering and Biotechnology has developed a solvent-based solution. Using a mixture of 1-propanol and heptane, the researchers were able to selectively dissolve BFRs present in acrylonitrile butadiene styrene (ABS) plastic, a material commonly used in keyboard and computer covers.

Efficiency – According to NTU, the process allows to recover more than 80% of the plastic after the removal of BFRs, maintaining its properties unchanged. " This approach could represent a turning point for the plastic recycling sector, ensuring safer materials and reducing the environmental impact " say the researchers.

Publication – The project's findings have been published in the *Journal of Chemical Engineering* and highlighted in NTU's research and innovation magazine, *Pushing Frontiers*. The success of the study underscores the increasingly central role of academic research in solving global challenges such as plastic waste management.

Previous breakthroughs – This isn't the first time NTU has made headlines for its innovations in plastics. Last year, another group of researchers at the university developed a method to turn plastic waste into structures that can be used as tumour scaffolds in medical laboratories. With this new breakthrough, NTU continues to demonstrate the potential of universities to drive change towards more sustainable practices that are safe for the future of the planet.

<https://telenord.it/plastica-e-innovazione-riciclare-in-sicurezza-e-possibile-con-la-nuova-scoperta-di-ntu-82840>