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Chemical recycling
Helping to provide a better recycling future for consumers

ABSTRACT. Undoubtedly the world is facing a severe problem with respect to plastics (synthetic organic polymers). On the one hand they are extraordinarily useful in daily life, especially for packaging, where their substitution by other materials is probably overall less sustainable in almost every case. On the other hand their reckless disposal in the environment has already resulted in more or less detrimental ecological consequences worldwide, to counter which the UK and other European countries are leading the development of technologies to divert used plastics away from ultimate disposal in landfill or incineration. Mechanical recycling is already well established and being developed to tackle the challenges of the multiplicity of commercial plastics and their contaminated state post-use, but may never completely overcome them. The latest development is chemical or feedstock recycling, in which thermal treatment converts the polymers back into monomers or even the building blocks of the monomers. A modular, hence flexible and scalable, commercial system is due to come onstream in 2021. The robust tolerance of the technology to input of mixed and contaminated polymers removes a major barrier to the efficient collection of used plastic from individual consumers, namely the detriment they suffer through compliance with onerous sorting and washing requirements. Furthermore, the output of chemical recycling is a valuable material that can be used as feedstock for the production of virgin plastics.

Nanotechnology Perceptions **16** (2020) 331–335

doi: 10.4024/N19JA20A.ntp.16.03