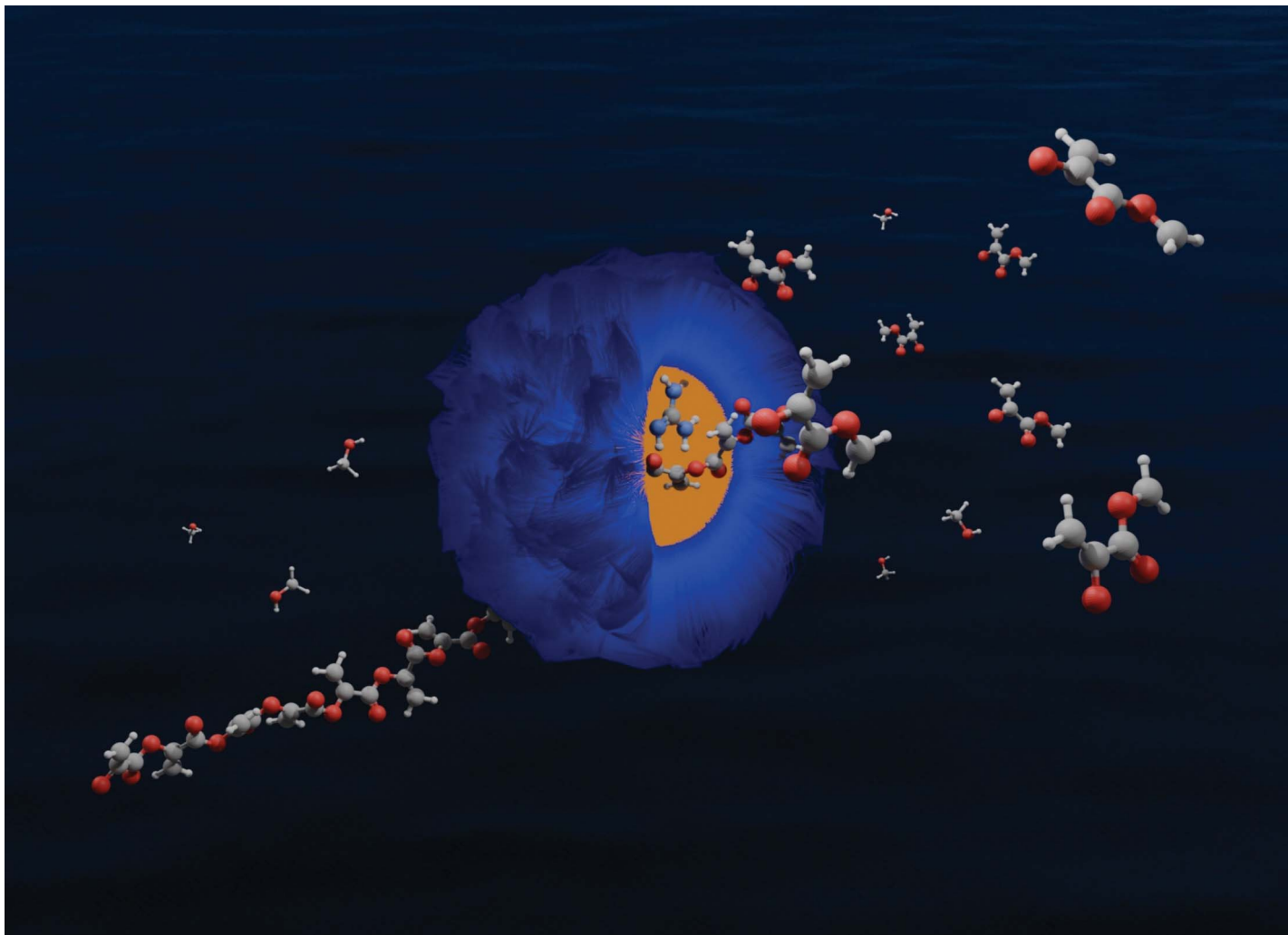




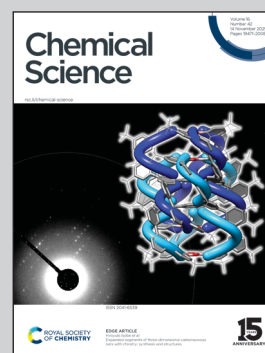
Showcasing research from Professor Herres-Pawlis' and Professor Pich's laboratories, Department of Chemistry, RWTH Aachen University, Germany.

Depolymerization of PLA catalyzed by guanidine-modified microgels

This study reports the synthesis of guanidine-modified poly(N-vinylcaprolactam) microgels as recyclable catalyst carrier systems for the depolymerization of polylactide (PLA). A new guanidine monomer, tetramethyl guanidine tetraethylene glycol methacrylate (TMGtegma*), was incorporated into microgels with controlled localization in the core or shell. The catalysts efficiently promoted PLA methanolysis, achieving up to 92% methyl lactate yield at 110 °C, outperforming unsupported guanidine by up to 46-fold. The microgels maintained catalytic activity over multiple cycles and under air, demonstrating a promising, sustainable approach for chemical recycling within a circular plastics economy.

Image reproduced by permission of Sandra Oden from *Chem. Sci.*, 2025, **16**, 19614.

As featured in:



See Andrij Pich,
Sonja Herres-Pawlis *et al.*,
Chem. Sci., 2025, **16**, 19614.