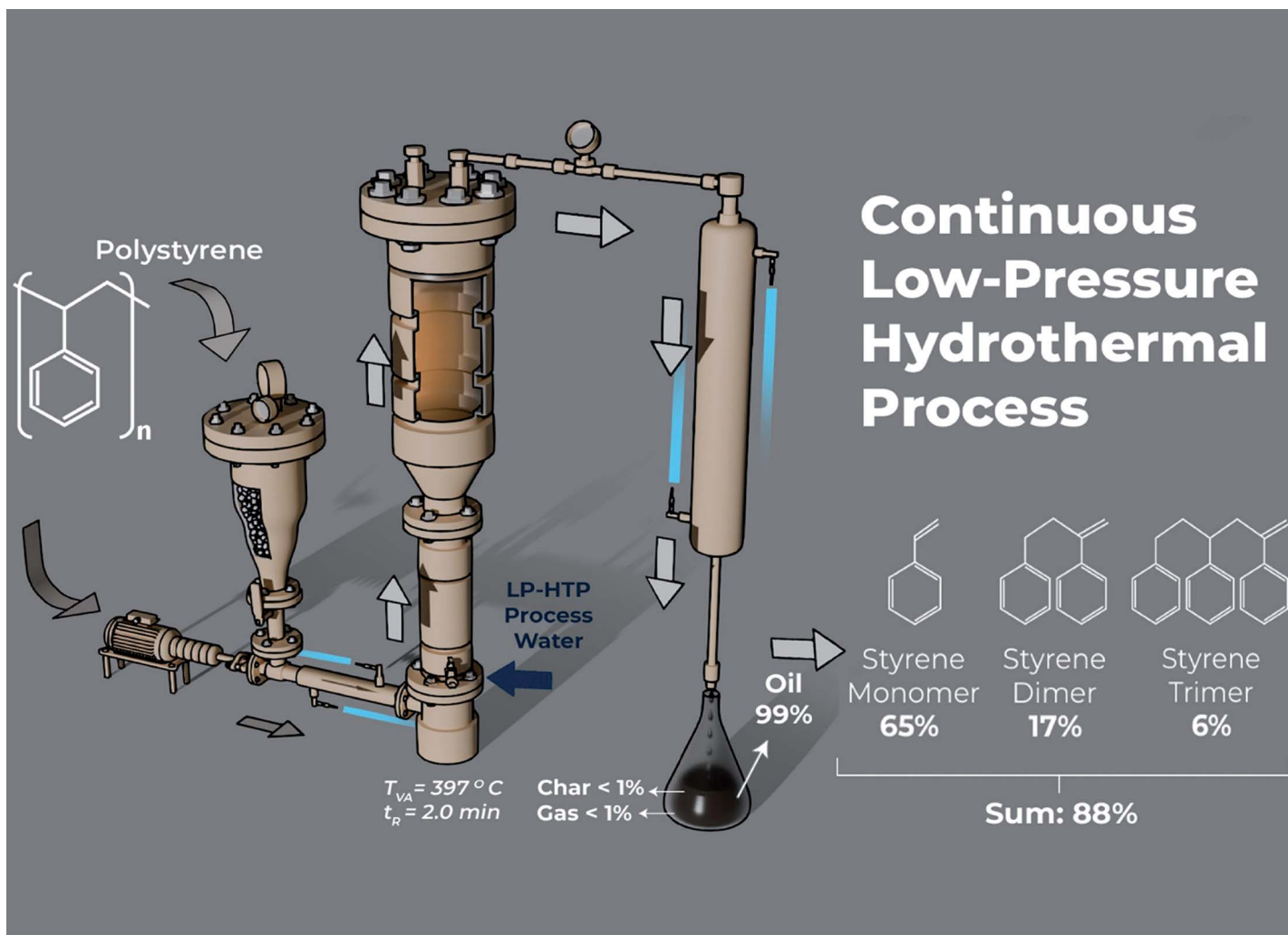




Showcasing research from Professor Wang's laboratory, Davidson School of Chemical Engineering, Purdue University, West Lafayette, Indiana, United States.

Continuous low-pressure hydrothermal processing methods for polystyrene conversion to oils

Exponential growth in the use of plastics since the 1950s has generated over 7 billion tons of waste in the landfills and oceans that degrades slowly, releasing microplastics and thousands of chemicals harmful to life and ecosystems. This study presents a scalable, continuous low-pressure hydrothermal processing (LP-HTP) method to convert one of the plastics, polystyrene, into valuable monomers—requiring no catalysts, producing less char than pyrolysis, operating at 220 times lower pressure than supercritical water liquefaction, and generating 95% lower green-house-gas emissions than incineration. The method has the potential to support a sustainable circular hydrocarbon economy.

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See Nien-Hwa Linda Wang *et al.*, *RSC Sustainability*, 2025, **3**, 3925.