Hemp-based thermoplastic offers a greener alternative to plastic packaging
APRIL 30, 2026
As the global pollution crisis caused by manufacturing and disposing of single-use plastics continues to grow, researchers have developed a non-toxic plastic alternative derived from the hemp plant. A study by a team of scientists and engineers demonstrates a stretchy, hemp-derived thermoplastic that can extend up to 1,600% of its size. The material has a high "glass transition temperature," a quality that allows plastics to stay dry and durable when they come into contact with boiling water.

The hemp material is suitable for producing transparent plastic films, coatings, and other common materials currently made from petroleum-based materials such as polyethylene terephthalate (PET), which is widely used in single-use water bottles, food packaging, and substrates for flexible electronics. These applications require medium- to high-temperature stability and melt processability, or the ability to easily melt, deform, and shape a material, which the team has achieved in a hemp-based polycarbonate for the first time.

Sotzing and colleagues developed a hemp-based plastic film and tested the processing parameters that give it the right structure and properties for widespread use, establishing guidelines for the material's industrial processing. (Source: *Chem Circularity* (2026).