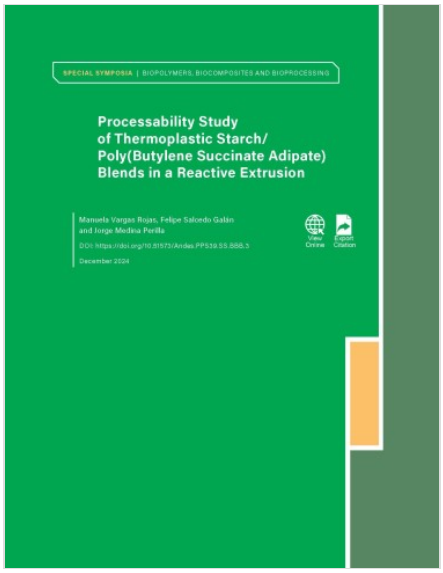
Processability Study of Thermoplastic Starch/Poly(Butylene Succinate Adipate) Blends in a Reactive Extrusion

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Sinopsis

Growing concerns about ocean contamination from fossil fuel based polymers have created a demand for biodegradable alternatives, particularly for packaging applications. Thermoplastic starch (TPS) is a promising, eco-friendly biopolymer but has poor mechanical properties and high hydrophilicity. To address these issues, this article explores modifying starches through reactive extrusion and blending them with other biodegradable polymers. The study evaluates blends of native or acetylated starch with poly(butylene succinate) adipate (PBSA), using glycerol as a plasticizer and tartaric acid as a reactive agent. Films were processed using an internal mixer and compression molding. Results show tartaric acid improves processability and slightly enhances mechanical properties such as ductility and tensile strength, though limitations persist due to morphological and thermal stability issues. Despite these challenges, reactive extrusion with tartaric acid offers a promising approach for developing new packaging materials.



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