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Study on the effect of enzyme treated fibers α -cellulose on the mechanical properties of starch blends

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In this study, the biodegradable materials were prepared by using sebacic acid modified Tapioca starch as the substrate, and then biodegradable plastics (Ecoflex) and α -cellulose were added to study the effect of adding α -cellulose on the properties of the material. This study investigated the mechanical properties of α -cellulose on biodegradable materials after treatment with 4 Vol% fiber enzyme (Cellic CTec3) at different temperatures (35, 45°C) for different hours (24, 30, 36, 42 hr). The material morphology was examined by scanning electron microscopy (SEM). After adding MCC or NCC hydrolyzed

α -cellulose to biodegradable materials, MCC and NCC promote starch to crystallize, so the elastic modulus and stress value of the material are greatly increased. After α -cellulose was treated by enzymes with higher temperature and longer treatment time, there were much more MCC or NCC to produce, they will make the starch crystallize easier. The optimum condition in this experiment is α -cellulose was treated with 4Vol% of Cellic CTec3. The good material properties in this study were adding MCC or NCC formed (45°C, 36hrs) to the starch/biodegradable blend.

Biography

Che-Wei Lin has completed graduation and master degree in materials engineering from Tatung University. He has done his major in biodegradable materials and he currently serves as a teaching assistant of materials experiment.

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