

Characterization of Compression-Molded Thermoplastic Starch/Polycaprolactone/Flax Fibre Ternary Composites

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CSBE08193

Rising environmental concerns resulting from the use of conventional non-biodegradable petroleum-based polymers necessitate the quest for biodegradable alternatives. To this effect, starch, a natural biopolymer, has played significant roles in form of matrix and fillers in starch-based composites. Besides, synthetic biodegradable polymers such as poly-lactic acid, poly(ϵ -caprolactone) and polyvinyl alcohol have also been developed. However, starch-based composites suffer low moisture resistance and poor mechanical properties while synthetic biodegradable polymers on the other hand are relatively expensive. Studies have been conducted on the prospects of blending starch and these synthetic polymers with a view to producing cost-effective biodegradable composites of satisfactory material properties. In this study, thermoplastic starch, poly(ϵ -caprolactone) and flax fibre are blended at certain formulations, compression-molded and the resulting composites characterized using scanning electron microscopy, differential scanning calorimetry, water absorption and tensile tests. Results will be made available and discussed at the conference.