

Journal of Applied Polymer Science

Algae-infused enhancement of PBAT stiffness: Investigating the influence of algae content on mechanical and thermal properties

Motloung, Mpho P
Council for Scientific and Industrial Research (CSIR)
Meiring Naude Drive, Pretoria, 0184
Email: MMotloung@csir.co.za

This study investigates the impact of algae loading on the properties of PBAT/ algae bio-composites produced through a melt extrusion process. The integration of algae as a filler demonstrated a reinforcing effect on the PBAT matrix, leading to an increase in modulus with higher algae loading. Concurrently, the tensile strength and maximum tensile strain of PBAT decreased with an increase in algae content. The thermal stability of PBAT was affected by adding algae, resulting in bio-composites exhibiting an intermediate behavior compared with their neat precursors. The optimal formulation is achieved with 20 wt.% of algae incorporated into the PBAT matrix. The produced PBAT/algae bio-composites, demonstrated versatile applications across a wide range of products.