Fish scales hydroxyapatite as potential fillers in HDPE composites for bone replacement applications

ABSTRACT

In this study, the potential of fish scales hydroxyapatite (FsHA) from Tilapia fish scales as reinforced filler in high density polyethylene (HDPE) composite were investigated. The Young's Modulus and impact strength of HDPE/FsHA composites at different FsHA wt% loading were studied. Fourier transform infrared was used to confirm the present of FsHA in the composites. The fracture surfaces of composites were characterized by scanning electron microscope (SEM) analysis. The results obtained indicate that the higher the FsHA filler contents, the higher the Young's modulus and impact strength properties. The SEM analysis also revealed that FsHA particles are well distributed in the HDPE matrix of composite. The composite has high potential for bone replacement applications.

Keyword: Composite; Fish scales; High density polyethylene; Hot press compression moulding; Hydroxyapatite