

Photocatalytic reduction of Cr(VI) by PVA-alginate encapsulated γ -Fe₂O₃ magnetic beads using different types of illumination lamp and light

Abstract :

In an attempt to improve properties of polycaprolactone-starch blend, this study uses zein as coupling agent in preparing the blend through a single-step process. Zein, which has affinity to both polar and non-polar groups, is expected to improve miscibility between the blends' constituents and its overall biocompatibility. Mechanical properties of the blend were tested and further characterizations (Fourier transform infrared spectroscopy, thermal properties) were performed to analyze the effect of zein as an addition to the blend's physical properties. The blend's biocompatibility was examined by indirect methods (contact angle and weight gain after immersion in simulated body fluid) and in vitro analysis. No significant effect on the blend's strength and stiffness was caused by adding zein. Hydrophilicity and cell affinity were improved when zein was added. Zein did not perform as a coupling agent that improved miscibility between polycaprolactone and starch, but its addition improved the blend's biocompatibility.