Ain Shams University
Faculty of Girls for
Arts, Science & Education

Applications of Starch Based Biodegradable Polymer Blends Modified By Radiation and Chemical Treatments

A Thesis

Submitted for

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In Inorganic and Analytical Chemistry

By

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Aim of the work

The present work aims to producing and improving the applicability of starch based biodegradable blends by ionizing radiation and additives in the field of biomedical and for uptake of metal ions applications. In this regard, blends based on plasticized starch (PLST) as major constituent, carboxymethyl cellulose and cellulose acetate (CA) were prepared in the form of thin films by casting solutions. In addition, the PLST/CMC/CA blends were grafted with acrylic acid. The gamma irradiated blends were characterized by IR spectroscopy, thermogravimetric analysis (TGA), differential scanning calorimetry (DSC), mechanical testing, swelling and scanning electron microscopy (SEM). As an application, the different blends were used in the field of biomedical as cell culture. These blends were also used in metal uptake applications.