
Departmental Seminar

Seminar Title	: Taro Starch based Bioplastic Reinforced with Fuller's earth
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Venue	: BM Department Seminar Room
Date and Time	: 25 Nov 2024 (11.30 AM)
Abstract	: The annual production of millions of tons of single-use plastics (SUP) is causing alarming levels of environmental degradation. Starch-based bioplastics have gained traction as an alternative to conventional SUP over the recent years. Taro (<i>Colocasia esculenta</i>) is a root vegetable that is widely cultivated in the tropical and subtropical areas of the world. Taro starch cultivars comprise 2.5-35.9% amylose and 70-83% amylopectin, making them a suitable source of starch for the bioplastic industry. This research deals with the extraction of starch from the Taro tuber and the development of a taro starch-based bioplastic reinforced with Fuller's earth as the filler in different concentrations. The glass transition temperature of Taro starch was determined through Differential Scanning Calorimetry, and Dynamic Light Scattering was used to obtain the particle size of the starch. Scanning Electron Microscopy was performed on the film samples to observe and analyse their surface morphology. Fourier Transform Infrared spectroscopy was conducted on the samples to validate the presence of taro and the starch-filler interaction in the samples. It is observed that with the increase in the filler concentration, the tensile strength of the film also incremented. Furthermore, the films were found to show slight swelling in alkali but on the other hand, were much more immune to acid and salt. The water vapour transmission rate of the film samples were seen to increase with decreasing filler concentration and the soil degradation analysis on the sample demonstrated that the films generated were biodegradable, therefore validating the use of taro starch as an innovative starch source for the production of bioplastics. Keywords : Bioplastic, Taro starch, Amylose, Amylopectin, Biodegradability ALL ARE CORDIALLY INVITED