

Preparation and properties of biodegradable films from *Sterculia urens* short fiber/cellulose green composites

J. Jayaramudu^{a,b,*}, G. Siva Mohan Reddy^a, K. Varaprasada, E.R. Sadiku^a, S. Sinha Ray^b, A. Varada Rajulu^c

a Department of Polymer Technology, Tshwane University of Technology, CSIR Campus, Building 14D, Private Bag X025, Lynwood Ridge 0040, Pretoria, South Africa

b DST/CSIR Nanotechnology Innovation Centre, National Centre for Nano-Structured Materials, Council for Scientific and Industrial Research, P.O. Box 835, Pretoria, South Africa

c Department of Polymer Science & Technology, Sri Krishnadevaraya University, Anantapur 515003, A.P., India

Abstract

The development of commercially viable “green products”, based on natural resources for the matrices and reinforcements, in a wide range of applications, is on the rise. The present paper focuses on *Sterculia urens* short fiber reinforced pure cellulose matrix composite films. The morphologies of the untreated and 5% NaOH (alkali) treated *S. urens* fibers were observed by SEM. The effect of 5% NaOH treated *S. urens* fiber (5, 10, 15 and 20% loading) on the mechanical properties and thermal stability of the composites films is discussed. This paper presents the developments made in the area of biodegradable *S. urens* short fiber/cellulose (SUSF/cellulose) composite films buried in the soil and later investigated by the (POM), before and after biodegradation has taken place. SUSF/cellulose composite films have great potential in food packaging and for medical applications.