

***SUSTAINABLE MATERIALS BASED ON ALIPHATIC POLYESTERS : TEACHING
OLD CHEMISTRY SOME NEW TRICKS***

S. Sivaram,
CSIR Bhatnagar Fellow,
Polymers and Advanced Materials Laboratory,
CSIR-National Chemical Laboratory,
Pune-411 008, INDIA.

Tel : 0091 20 2590 2614
Fax : 0091 20 2590 2615
Email : s.sivaram@ncl.res.in

Abstract

Aliphatic polyesters, a quintessential embodiment of a synthetic macromolecule, were first reported by Wallace Carothers in the early thirties. During the past decade there has been a resurgence of interest in this class of materials because of two reasons. One, such polyesters are biodegradable under composting conditions; secondly, many of the building blocks for aliphatic polyesters can be derived from renewable feed stocks, thus, contributing to the concept of “sustainable materials”.

However, synthesis of aliphatic polyesters from a diverse range of building blocks require a better understanding of what limits the original chemistry of Carothers and strategies to get around these limitations. Many such strategies have emerged in the last fifteen years, leading to industrial production of select classes of aliphatic polyesters. Yet, challenges remain in the synthesis of aliphatic polyesters using wide range of monomers and chemistries.

This lecture will highlight current challenges in the synthesis of aliphatic polyesters using a wide variety of monomers and methods explored to circumvent some of the limitations imposed by the conventional polycondensation chemistry.