

**Development and characterization of polysaccharides/carrageenan based biofilms**J P Nirmala<sup>1</sup>, B. Kumar<sup>2</sup> and S. AnandaKumar<sup>3</sup><sup>1,2</sup> Department of Printing Technology, Anna University, India<sup>3</sup> Department of Chemistry, Anna University, India

The research and development of biofilms becomes interesting and their usages are increasing in recent days. The biofilms are generally produced from natural materials like lipids, proteins and polysaccharides. Starch is a renewable and abundantly available material which is suitable for making biofilms. An attempt has been made in the present work to develop a biofilm from the starch of tapioca root and rice boiled water. The film casting solutions were prepared by varying the concentration and gelatinization of starch and carrageenan. Two different sources of starch and three concentrations of carrageenan (0.5%, 0.75 % and 1%) were used with and without adding 0.5% glycerol (food grade) as plasticizer to prepare film casting solutions. The results show that all solutions behave as non-Newtonian pseudo-plastic liquid and follow the power law relationship. The films were produced by solution casting method. The mechanical and barrier properties of starch/carrageenan cast films were investigated. The optical, porosity and printability properties of starch/carrageenan blends were also studied. The selected biofilms samples were also analysed for surface characteristics and uniformity using Scanning Electron Microscope output images. FTIR analysis was done to identify the functional group of the samples. It is found that the mechanical and barrier properties of the cast films increase with increasing carrageenan content.



starch / carrageenan film

**Biography**

Mrs. J.P. Nirmala, is a graduate in Printing Technology (CEG, Anna University) and completed Post graduation in Computer Science and Engineering (IIT, Madras) in the year 2008. She has more than 15 years of teaching experience and two years of industrial experience. She has guided around 10 PG projects. Her research interest is in finding environmentally safe packaging materials for disposable consumer products. One of her other objective is to prepare biofilms from agri/food industrial waste which is quickly degradable.

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