

8<sup>th</sup> Edition of

BIOPOLYMERS & BIOPLASTICS

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POLYMER SCIENCE AND ENGINEERING CONFERENCES

October 15-16, 2018 | Las Vegas, USA

### Development and characterization of polysaccharides/carrageenan based biofilms

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The research and development of biofilms become 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 a 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 analyzed 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.

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