ABSTRACT

In this study, chitosan with 85% deacetylation was used with LiOAc.2H₂O as doping salt and Al₂O₃ or CeO₂ as dispersoid. They were mixed in certain weight percentages and dissolved in 100ml of 0.5% acetic acid solution. These solutions were poured into petri dishes and left at room temperature for film formation. Infrared Spectroscopy has shown that there is interaction between chitosan and LiOAc with and without dispersoid. The peaks are shifted, broadened, split and differs in intensity. The electrical conductivity of all samples was calculated using the bulk resistance value obtained from the complex admittance plot. The highest electrical conductivity is 8.92 X 10⁻⁹ Scm⁻¹ exhibited by the 2wt% Al₂O₃ added film at room temperature, which is 28 times higher than the film without dispersoid. Samples containing various CeO₂ content exhibit conductivity value with the same order of magnitude. The dielectric behavior and modulus formalism shows that the samples of Al₂O₃ and CeO₂ are ionic conductors. Using XRD, it was observed that the LiOAc peak was depressed when small amounts of Al₂O₃ (up to 2wt%) were added. The crystallinity of films increased when more dispersoid is added. The same observation was noted for samples containing CeO₂, but the changes are not as significant compared to Al₂O₃. All samples are thermally stable up to 350°C. Surface morphology changes with different wt% of Al₂O₃.