

Sintesis bioplastik berbahan dasar PVA-Selulosa dari tongkol jagung menggunakan asam sitrat sebagai crosslinker dan gliserol sebagai plasticizer = Synthesis of bioplastics based on PVA-Cellulose from corn cobs using citric acid as crosslinker and glycerol as plasticizer

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Abstrak

Bioplastik berbahan dasar poli(vinil alkohol) (PVA), PVA-selulosa murni (SM), PVA-selulosa tongkol jagung (STJ), PVA-SM-asam sitrat (AS), PVA-STJ-AS dan PVA-STJ-AS-gliserol (G), telah berhasil disintesis dan memiliki karakteristik yang berbeda-beda. Penambahan selulosa murni pada bioplastik PVA dapat menurunkan persen kelarutan dan meningkatkan ketahan tarik bioplastik yang terbentuk. Bioplastik disintesis melalui metode ikat silang dengan asam sitrat dimana terjadi reaksi esterifikasi fischer yang bertujuan untuk meningkatkan kekuatan mekanis dan mengurangi mobilitas struktur dari bioplastik yang dihasilkan. Hasil penelitian menunjukkan bahwa bioplastik PVA-SM-AS memiliki persentase kelarutan paling kecil sebesar 2,1%, persentase swelling paling kecil sebesar 55,7% dan kuat tarik paling besar yaitu 15,98 MPa tetapi memiliki persen regangan maksimum paling kecil sebesar 86,7%. Sedangkan bioplastik yang memiliki persen regangan maksimal paling besar adalah bioplastik PVA-STJ-AS-G sebesar 1200% tetapi memiliki ketahanan tarik paling kecil sebesar 1,88 MPa.

.....Bioplastics based on poly(vinyl alcohol) (PVA), PVA-pure cellulose (PC), PVA-corn cob cellulose (CC), PVA-PC-citric acid (CA), PVA-CC-CA and PVA-CC-CA-glycerol (G), have been successfully synthesized and have different characteristics. The addition of pure cellulose to PVA bioplastics can reduce the percent solubility and increase the tensile strength of the formed bioplastics. Bioplastic was synthesized through a crosslinking method by adding citric acid where a Fischer esterification reaction occurs which aims to increase the mechanical strength and reduce the mobility of the structure of bioplastic. The results showed that bioplastic of PVA-PC-CA had the smallest solubility percentage of 2.1%, the smallest swelling percentage of 55.7% and the highest tensile strength of but had the smallest maximum strain percentage of 86,7%. While the bioplastic PVA-STJ-AS-G which has the greatest maximum strain percentage of 1200% but had the smallest maximum stress of 1,88%.