

Sintesis dan karakterisasi membran biokomposit dengan organoclay terinterkalasi surfaktan HDTMABr sebagai nanofiller = Synthesis and characterization biocomposite membrane with organoclay intercalated surfactant HDTMABRr as nanofiller

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Abstrak

Membran selulosa asetat / organoclay-HDTMABr dibuat melalui dua tahap sintesis, yaitu sintesis organoclay dan sintesis membran. Sintesis organoclay meliputi tiga tahap, yaitu purifikasi karbonat, preparasi Na-Bentonit, dan sintesis organoclay-HDTMABr. Organoclay-HDTMABr disintesis menggunakan Na-Bentonit dan HDTMABr sebanyak 1 KTK dengan metode ultrasonik, dimana Na-Bentonit yang digunakan memiliki kapasitas tukar kation (KTK) sebesar 48,749 meq/100 gram bentonit. Pengujian XRD pada sampel organoclay menunjukkan interkalasi HDTMABr dapat meningkatkan basal spacing organoclay menjadi 18,80 Å dan 19,04 Å pada masing-masing sintesa dengan purifikasi dan tanpa purifikasi karbonat. Telah dilakukan variasi komposisi organoclay-HDTMABr 1 KTK (OCT-C16) yang ditambahkan pada biokomposit sebagai nanofiller. Hasil sintesis pada penelitian ini dikarakterisasi menggunakan FTIR. Dari kelima variasi komposisi OCT-C16 (0%, 1%, 3%, 5%, dan 7%) yang ditambahkan, variasi 7% OCT-C16 menghasilkan produk membran biokomposit yang paling keruh, paling lentur, dan tidak mudah robek.

.....Cellulose acetate / organoclay-HDTMABr membranes were prepared through two stages of synthesis, namely : the organoclay synthesis and membrane synthesis. Organoclay synthesis involved three stages : purification of carbonate, preparation of Na-bentonite, and synthesis of organoclay-HDTMABr. Organoclay-HDTMABr was synthesized with the amount of 1 CEC Na-Bentonite and HDTMABr using an ultrasonic method. The Na-Bentonite had a cation exchange capacity (CEC) of 48.749 meq/100 grams of bentonite. XRD measurement result showed HDTMABr increased the basal spacing of organoclay to 18,80 Å and 19,04 Å for organoclay with carbonate purification and without carbonate purification respetively. The HDTMABr-organoclay (OCT-C16) was added to cellulose acetate as nanofiller with different compositions. The biocomposites obtained in this study, with the clay loading of 0%, 1%, 3%, 5%, and 7% were characterized by FTIR. It was observed that the addition of 7 % OCT-C16 into cellulose acetate membranes produced the most flexible, the most opaque, and most difficult torn membrane.