

Karakterisasi dan sifat mekanik polyvinyl alcohol organoclay tapanuli terinterkalasi surfaktan oktadesitrimetilamonium bromida =
Characterization and mechanical properties of polyvinyl alcohol tapanuli organoclay intercalated surfactant octadecyltrimethylammonium bromide

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Abstrak

Organoclay adalah lempung yang disintesis dengan bahan organik ODTMABr tanpa mengubah struktur kimianya. Pergeseran puncak (001) difraktogram menunjukkan bahwa ODTMABr berhasil masuk ke dalam lapisan lempung. Basal spacing pada organoclay lebih besar dibandingkan dengan basal spacing bentonit. Uji FTIR menunjukkan bahwa organoclay Tapanuli (OCT-C18) terinterkalasi oleh surfaktan ODTMABr. Sintesis antara Polyvinyl Alcohol (PVA) dan OCT dalam jumlah sedikit yaitu PVA/OCT-C18 5% atau kurang menghasilkan nanokomposit berstruktur eksfoliasi. Penambahan OCT-C18 memberi peningkatan kekuatan mekanik dan modulus elastisitas PVA/OCT-C18, tetapi memberi penurunan regangan pada PVA/OCT-C18 7%. Hasil SEM pada permukaan patahan menunjukkan peningkatan kekuatan mekanik dan teramatinya peningkatan kekasaran permukaan patahan. Banyak dan besar rongga pada PVA/OCT-C18 mempengaruhi kekuatan mekanik PVA/OCT-C18.

.....Organoclay was synthesized using ODTMABr surfactant without changing its chemical structure. The diffractogram showed that the (001) peak shifted and this indicated that the organoclay layers were intercalated. The basal spacing of organoclay which was higher than of bentonite. The FTIR results indicated the ODTMABr surfactant intercalated the clay layers. Synthesis of Polyvinyl Alcohol (PVA) and small amounts of OCT-C18 less than 5% wt, produced exfoliated nanocomposite structure. The addition of OCT-C18 improved mechanical strength and modulus of elasticity, but it decreased the value of strain of PVA/OCT-C18 composites. SEM observation results on the fracture surface showed that the enhanced of mechanical strength of PVA/OCT-C18 followed by the roughness of fracture surface. The number of voids or cavities on PVA/OCTC18 affected the mechanical strength of PVA/OCT-C18.