

ABSTRAK

Chitosan and polyvinyl alcohol (PVA) are the polymer materials most often developed for biomedical applications in recent years because they have properties including non-toxic, biocompatible, flexible. Nanofiber membrane made from a mixture of chitosan and PVA solutions by electrospinning method has a relatively low tensile strength with a certain concentration (PVA / NeCS 10% and 15%). Therefore, in this research, the nanofiber membrane was made from chitosan nanoemulsion (NeCS) and PVA by electrospinning method. Then increased the concentration of NeCS to determine the structure of the fiber, tensile properties of the membrane and characterization of beads formed on the PVA / NeCS nanofiber membrane.

The making of the PVA / NeCS nanofiber membrane by the electrospinning method begins with making a 10% PVA solution as a matrix. Then, NeCS as a filler is added to the PVA solution to be made as a NeCS / PVA spinning solution with concentrations of 0, 20, 25, 30% (w / w). Furthermore, the electrospinning process of the PVA / NeCS solution was carried out at a voltage of 14 kV, the distance of the needle to the collector (TCD) 15 cm, and the diameter of the syringe needle 0.6 mm. The viscosity of the PVA / NeCS polymer solution was measured using a viscometer. The morphology of the beads formed is characterized using a Scanning Electron Microscope (SEM), and its tensile properties use a Universal Testing Machine (UTM).

The results showed that the addition of NeCS to the PVA solution caused beads to form. Factors for the appearance of beads are partly because the viscosity of the solution is too low and the concentration of NeCS is too high. The results of this study indicate the diameter of the fiber size (94.41 -173.33 nm). Tensile strength value (3,136-12,605 MPa). Modulus of elasticity of nanofiber membranes (24,931-51,259 MPa). Strain (38.32-94.14%).

Keywords : NeCS, PVA, electrospinning, nanofiber, SEM, tensile properties, *beads*.

KATA PENGANTAR

Alhamdulillah puji syukur penulis panjatkan kepada Allah SWT, karena dengan rahmat dan hidayah-Nya, penulis dapat menyelesaikan tugas akhir ini, Shalawat serta salam semoga senantiasa kita haturkan kepada junjungan kita Nabi Muhammad SAW, seluruh keluarganya para sahabatnya, serta umat beliau sampai akhir zaman nanti, amin. Penyusunan tugas akhir ini diajukan untuk memenuhi salah satu syarat memperoleh gelar Sarjana pada program Studi Teknik Mesin Universitas Muhammadiyah Yogyakarta. Dengan Judul **“PENGARUH KONSENTRASI NANOEMULSI (NeCS) TERHADAP STRUKTUR DAN SIFAT TARIK MEMBRAN NANOFIBER PVA/NeCS”**.

Penelitian ini menggunakan bahan PVA (*Polyviny alcohol*), Aquades, Nanoemulsi kitosan (NeCS) yang dicampurkan kemudian di Electrospinning untuk mendapatkan membran nanofiber PVA/NeCS yang akan dilakukan pengujian kuat tarik, viskositas, scanning electron microscope (SEM). Hasil dari penelitian ini diperoleh data dimana membran PVA/NeCS 20% masuk dalam kategori standar native skin yang di tentukan serta penyebab terjadinya beads dan faktor apa saja yang mempengaruhi terbentuknya beads juga dijelaskan pada penelitian ini.

Penulis sangat menyadari bahwa tugas akhir ini masih jauh dari kata sempurna , maka dari itu penulis berharap saran dan kritik yang membangun untuk kesempurnaan dalam tugas akhir ini. Penulis berharap semoga tugas akhir ini bermanfaat bagi pembaca dan masyarakat khususnya mahasiswa Teknik Mesin.

Yogyakarta, 28 Agustus 2019

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