INTISARI

KARAKTERISASI SERAT NANO PVA/AQUADES SEBAGAI VARIASI KONSENTRASI UNTUK PENYEJAJARAN ARAH MOLEKUL KRISTAL CAIR MENGGUNAKAN METODE ELEKTROSPINNING DENGAN KOLEKTOR TEMBAGA

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Telah berhasil dilakukan fabrikasi serat nano *polyvinyl alcohol* (PVA)/aquades berpola sejajar menggunakan metode elektrospinning dengan kolektor sejajar berbahan tembaga. Konsentrasi larutan PVA divariasi dari 11%, 13%, 15%, 17%, dan 19%. Hasil perhitungan menunjukkan bahwa pada konsentrasi 11% diperoleh diameter nanofiber terkecil yaitu (265±63) nm. Pada konsentrasi 19% diperoleh diameter nanofiber terbesar yaitu (619±58) nm. Pada penelitian ini diperoleh bahwa kenaikan diameter serat meningkat seiring kenaikan konsentrasi larutan PVA. *Scaling exponent* dari PVA juga dihitung, hasil menunjukkan bahwa pada experiment ini, nilai scaling exponent adalah 1,6. Parameter kesejajaran (*S*) antar serat pada semua konsentrasi juga dihitung. Hasilnya menunjukkan bahwa parameter kesejajaran menunjukkan nilai sekitar 0,99-1. Serat nano ini digunakan untuk menyejajarkan molekul kristal *cair 4-methoxybenzilidene-4-butylaniline* (MBBA). Citra sampel ini diamati menggunakan *Optical Polarizing Microscopy* (OPM) dan menunjukkan adanya pola gelap terang.

Kata kunci : elektrospinning, serat nano, kolektor sejajar, penyejajaran, konsentrasi, parameter kesejajaran, kristal cair

ABSTRACT

CHARACTERIZATION OF PVA/AQUADES NANOFIBERS AS A VARIATION OF THE CONCENTRATION TO THE DIRECTION ALIGNMENT OF LIQUID CRYSTAL MOLECULES USING ELECTROSPINNING METHODS WITH COPPER COLLECTORS

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Alignment nanofiber polyvinyl alcohol (PVA)/aquades has been succesfully prepared by electrospinning method using copper (Cu) parallel collector. The concentration of PVA were varied from 11%, 13%, 15%, 17%, and 19%. The result showed that the smallest diameter was (265±63) nm and obtained at 11% of concentration. The biggest diameter was (619±58) nm and obtained at 19% of concentration. In this study showed that diameter of nanofibers increase as increasing concentration of PVA. The scaling exponent of pva was also calculated. The result showed that in this experiment, the value of scaling exponent is 1,6. The orientation parameter of nanofibers (*S*) at all concentrations was also calculated. Results showed that orientation parameter were on values around 0,99-1. These nanofibers were used The orientation parameter of nanofibers (*S*) at all concentrations was also calculated. Results showed that orientation parameter were on values around 0,99-1. These nanofibers were used to align liquid crystal of *4-methoxybenzilidene-4-butylaniline* (MBBA). The image of the sample was observed using *Optical Microscopy Polarazing* (OPM). Result showed there are bright and dark patterns of the sample.

Keywords : electrospinning, nanofiber, parallel collector, alignment, concentration, orientation parameter, liquid crystal