

Effects of supplied voltage and flow rate on morphology of electrospun titanium oxide nanofibers

Abstrak

Electrospun titanium dioxide (TiO₂) nanofibers with diameter from 50-200 nm were fabricated by using an ethanolic solution that contained polyvinylpyrrolidone (PVP) and titanium tetraisopropoxide (TTiP). The morphology of electrospun TiO₂ nanofibers were affected by the process parameters of electrospinning especially supplied voltage and solution feeding rate. The morphology of fibers was analyzed by scanning electron microscope (SEM). Diameter of the fibers is decreased with the increasing of voltage supplied from 15 kV to 25 kV. Discontinuity of nanofibers production occurred when the applied voltage is 25 kV. Meanwhile, as the solution feeding rate is increased from 1.0 ml/ hr to 3.0 ml/ hr, the diameter of the fabricated fibers is increased with an applied voltage of 12 kV and 10 cm of tip to collector distance.