

Electrospun Lignin-based Carbon Nanofiber Tows

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In this experiment, carbon nanofiber tows are prepared via carbonizing electrospun lignin/PVA nanofibers. A U-shape frame was used to receive the fibers, and the fibers were post-treated with a coagulation bath to remove excessive solvents and solve the problem of adhesion. The fibers heat treated in different stages and after the coagulation bath were studied by optical microscope, scanning electron microscope, differential scanning calorimeter, universal testing machine. The results show that: 1) highly aligned lignin-based carbon nanofiber tows were successfully prepared, 2) the stabilization process a vital role on controlling the structures and properties of resulting carbon nanofibers, 3) increasing lignin content result in fiber adhesion during the carbonization step. In general, lignin is a potential material in solving adhesion problems and improve mechanical properties of carbon nanofiber tows.