

Alumina fiber prepared by electrospinning blended with PVP solution

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Alumina (Al_2O_3) is one of the most excellent metal oxide and has been studied extensively over a long period of time because of their potential for broad applications in adsorbents, high thermal conductivity and low electrical conductivity. Several methods have been adopted for the synthesis of nanosized alumina materials which includes mechanical milling, sol-gel method, hydrolysis & precipitation, hydrothermal method, combustion synthesis and electrospinning method. Among them, electrospinning, a non-equilibrium electrohydrodynamic process, is a platform technology for the production of a range of nanofibrous materials. It has been fabricated from a suitable organic-inorganic composite solution by spinning in an electric field applied between the tip of a needle and the target plate (collector). The spinning solutions of Aluminium Sec-Butoxide/PolyVinylPyrrolidone (ASB/PVP), which were prepared by the sol-gel process of the mixture of ASB, PVP, ethanol and distilled water, were electrospun to form ASB/PVP organic-inorganic hybrid fibers. Alumina nanofibers with average diameters of 200–500 nm were obtained by calcinations of the prepared fibers. The $\alpha\text{-Al}_2\text{O}_3$ were obtained after calcinations at 1100°C.