

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. A new method for synthesizing alumina (Al_2O_3) nanofibers through the electrospinning method was reported. The spinning solutions of Aluminum Sec-Butoxide/PolyVinylPyrrolidone (ASB/PVP), which were prepared by the sol-gel process of the mixture of ASB, PVP, ethanol and redistilled water, were electrospun to form ASB/PVP organic-inorganic hybrid fibers. It has average diameters of 200–500nm. But as-prepared fibers were cracked after calcinations at 1,100°C. So we adopted to 'Curing' process at decomposition temperature of polymer(PVP). PVP could find to decompose at 200~600°C from TG-DTA result. And cured ASB/PVP organic-inorganic hybrid fibers were calcinated about 3hr at 800, 900, 1,000, and 1,100°C respectively. And it has α -Alumina in the form of rod that it was ground using agate mortar to calcined fibers. It were characterized by SEM, TG-DTA, FTIR, and XRD.