

PP1.3.1 Filter Performance of Elastic Electrospun Fibrous Media in Solid Aerosol Separation

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Elastic electrospun fiber mats are novel to aerosol separation applications since nonwoven filter media are generally composed of inelastic fibers. Aerosol flow passing through an elastic fiber mat causes the mat to stretch such that the pore structures may change due to the slippage of the fibers, which leads to different separation performances compared to traditional filter media. This paper discusses the fabrication, characterization, and application of elastic electrospun fiber mats. Filtration performance of the elastic fiber mats under non-stretched and stretched conditions were evaluated and compared by means of solid aerosol separation. It was concluded that compared to the non-stretched fiber mats, the pores among the stretched fiber mats got enlarged such that the penetration of the solid particles increased and the pressure drop generated due to the passing of the aerosol flow decreased.

