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# Optimization of Process and Solution Parameters in Electrospinning Polyethylene Oxide

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ABSTRACT

This paper reports the optimization of electrospinning process and solution parameters using factorial design approach to obtain uniform polyethylene oxide (PEO) nanofibers. The parameters studied were distance between nozzle and collector screen, applied voltage and polyallylamine hydrochloride (PAH) concentration in the spinning solution and its influence on nanofiber diameter. The selected parameters were varied at three levels using Box and Behnken factorial design. The interaction effect between concentration of PAH and the distance played the most significant role, followed by the interaction between distance and applied voltage, and last by the applied voltage alone in obtaining uniform nanofibers. This study shows that in a multiple variable process like electrospinning, the interaction between the different parameters played a significant role, rather than one particular parameter in obtaining uniform nanofibers. It opens up new possibilities in process optimization with a precise control over fiber diameter from the selected parameters.