

Design of a Mixing Chamber to Maximize Mixing Efficiency and Achieve a Homogeneous Polymer Dope Mixture

A Major Qualifying Project Report
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by

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Cytiva (formerly GE Healthcare Life Sciences) advances medicine by enabling pharmaceutical companies to develop and manufacture biopharmaceuticals. We provide a portfolio of solutions for our customers to effectively and efficiently product vaccines, monoclonal antibodies, and recombinant proteins. In bioprocessing operations, single-use cartridges are used in both microfiltration and ultrafiltration applications. These filters are constructed using hollow fiber membranes that are offered in a variety of pore sizes. The process of manufacturing the membranes involves mixing of a polymer-solvent blend known as dope. The dope is then co-extruded through a nozzle along with a bore solution. The interaction of these two fluids begins the pore structure formation. Optimizing the polymer-solvent dope mixing to enable more consistent fiber manufacturing is desired. The goal of this project was to analyze the mixing parameters to obtain a homogeneous polymer-solvent blend.

The contents of this MQP have been withheld due to intellectual property concerns.