

2008 AFS Annual Conference

Valley Forge, PA

May 19-22, 2008

Title: Microscale Study of Drop Migration in Coalescing Filters

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This paper will discuss the effect of parameters like direction of air flow, drop and fiber sizes, flow velocity and fiber orientation on the coalescence and drainage phenomena in fibrous filters. This information is vital to enhance the removal of liquid drops and minimize the clogging of the fibrous filters. It is significant in designing self cleaning filters whereby the liquid droplets collect on filters and drain down in a collecting device. The challenge is to estimate velocity of these drops during the coalescence process as a function of the driving air flow and surface properties of the filter structure. The paper will discuss in detail the correlations that have been developed from the experiments and mathematical models. The experiments are conducted on different types of fibers and under different air flow conditions. These correlations are a unique approach to determine the velocities of liquid drops on fibers to predict migration and drainage in coalescing filters.