

## **Simulation Of The Effect Of Capillary-Channel Polymer Fiber Filter Media On Particulate Air Filtration**

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### **ABSTRACT**

The overall goal of this project is to develop high efficiency particulate air (HEPA) filter media, using conventional fiber spinning techniques, with lower pressure drop and higher efficiency than current media through the use of shaped fibers. HEPA filters are widely used in both military and civilian applications.

The mathematical model and method of solution will be described. Then results will be presented for simulation of particulate filtration using a variety of filters consisting of round fibers, capillary-channel polymer (C-CP) fibers, or a composite mix of different shapes. Modeling results demonstrate some unique aspects of C-CP fiber filtration. Benchmark comparisons with round-fibers and with experimental will also be discussed.

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#### **Bio**

Chris Cox graduated from Grove City College with a Bachelor's degree in Mathematics and received both Master's and PhD degrees in Mathematics from Carnegie Mellon University. He is a professor in the Department of Mathematical Sciences at Clemson University, where he teaches numerical methods courses, carries on research in mathematical modeling mostly related to fluid dynamics, and in his spare time serves as associate chair and coordinator of instruction for his department.