

A Combinatorial Method for the Synthesis and Characterization of Multigas Capable Respirator Carbons

Jennifer V. Romero¹, Jock W. H. Smith¹, Braden M. Sullivan¹, J. R. Dahn¹, and Lisa Croll²

1. Department of Physics and Atmospheric Science Dalhousie University, Halifax, Nova Scotia, Canada
2. 3M Canada Company, OH&ESD, Brockville, Ontario, Canada

Over the last number of years, performance specifications, particularly those for first responder and military end users, continue to drive a need for respiratory protective products with broad spectrum capability. Traditionally, Whetlerite type carbons have been used in filters designed to meet these multigas requirements. Despite the fact that these carbons are still the market leaders for performance, their manufacture is difficult and costly due to the large amounts of ammonia that must be removed from the final product. To avoid this costly manufacturing process it was desirable to develop a water-based multigas formulation and carbon treatment process. This presentation will describe a combinatorial method that was designed and built to enable the rapid synthesis and characterization of novel ammonia-free multigas respirator carbons as well as some of the resulting new materials that have been discovered thus far.