

ISRP 2002 abstract

Presenter/author	Title	Abstract
<p>Hindmarsh, Chris J.</p> <p><i>DSTL, Porton Down, Salisbury, Wilts., UK</i></p>	<p>Carbon Fibres for Combined Particulate and Vapour Filters</p>	<p>The current UK military respirator canister comprises of a dual filter medium, including a glass fibre particulate filter to remove aerosols and a layer of granular activated carbon to remove toxic vapours. Whilst this is an effective method for providing protection there is an associated pressure drop over the filter leading to a significant breathing resistance. A reduction in this pressure drop, whilst maintaining or improving the effectiveness of the filter, is therefore highly desirable.</p> <p>This study describes efforts to produce a single low-pressure drop filter medium capable of removing both aerosols and vapours. This filter medium is based on carbon fibres. A range of pitch-based or PAN-based carbon fibres have been formed into mats and assessed for their ability to remove an aerosol challenge. Vapour adsorbing properties have been imparted to the carbon fibres by either physical or chemical activation methods. The porous structure of the activated carbon fibres has been characterised by gas adsorption techniques. Other factors, such as the effect of activation on the structural integrity of the carbon fibres has also been assessed. Finally, methods to incorporate chemisorptive properties have been investigated by techniques such as vacuum impregnation and plasma polymerisation</p>