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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: CROSS-REFERENCE TO RELATED APPLICATIONS



**Low-Loft Filtration Media
X200 with MgO Nanoparticles**

(57) **Abstract:** A reactive and adsorptive (i.e., protective) fiber, a multi-element protective filter and methods for constructing and using same which possess at least chemically reactive and biocidal properties. Nanoparticles from different classes such as metal oxides, metal hydroxides, metal hydrates and POMs are incorporated into elements which can be utilized in a wide variety of protective materials. The nanoparticles may be treated to reduce water solubility or combined with halogens, alkali metals or secondary metal oxides to specifically engineer the nanoparticle to address a particular chemical or biocidal threat. When arranged upstream of an activated carbon filter, the nanoparticles provide enhanced adsorption or additional reactive properties to the protective filter. When used with carbon specially treated with metal ions, the protective filter retains the ability to adsorb blood agents as well. Significant advances in nanoparticle technology are described wherein clusters made from about 1nm to about 200nm sized nanoparticles are reduced to tangible filter element precursors.

WO 2003/104534 A3

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/05176

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : D02G 3/00; B01D 39/14; B05D 1/12
US CL : 428/372; 427/180; 210/500.1

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 428/372; 375; 427/180; 210/500.1

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 4,242,226 A (SIREN), 30 December 1980, see entire document.	1-28
Y	US 4,831,011 A (Oikawa et al) 16 May 1989, see abstract, column 1.	1-28

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

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