PROTECTION - SCIENCE AND TECHNOLOGY ADVANCES FOR CHEMICAL AND BIOLOGICAL PROTECTION

Fabrication Of Novel Functional Composite Forms For Filtration

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Current individual protection filters use packed beds of activated, impregnated carbon. While highly effective against toxic chemicals, the filters are often burdensome and negatively impact rifle sighting and breathing. Furthermore, packed beds limit the form factors of filters, thus limiting shapes and sizes that may be more efficiently integrated into masks and helmets.

We have begun investigating novel functional forms for filtration to address these shortcomings. Composite materials such as foams/aerogels, fibers, and beads are under development that can be shaped into novel conformal forms, opening the door to novel mask/filter concepts for next generation systems. In this talk, we will discuss methods for fabricating these materials, ongoing efforts to incorporate active sorbents such as metal-organic frameworks, and the eventual engineering options for incorporating such composites into novel designs.

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