

# Researchers produce smart fabric to neutralize nerve gas

August 16 2017

---



Teresa Bandosz. Credit: City College of New York

From the lab of City College of New York chemical engineer and Fulbright Scholar Teresa J. Bandosz comes a groundbreaking development with the potential to thwart chemical warfare agents: smart textiles with the ability to rapidly detect and neutralize nerve gas.

The fabric consists of a cotton support modified with Cu-BTC

MOF/oxidized graphitic carbon nitride composites. The latter were developed in the lab previously and tested as nerve agent detoxification media and colorimetric detectors.

Combining Cu-BTC and g-C<sub>3</sub>N<sub>4</sub>-ox resulted in a nanocomposite (MOFgCNox) of heterogeneous porosity and chemistry. Upon the deposition of MOFgCNox onto cotton textiles, a stable fabric with supreme photocatalytic detoxification ability towards the [nerve](#) gas surrogate, dimethyl chlorophosphate, was obtained.

The detoxification process was accompanied by a visible and gradual color change, which Bandosz said can be used for the selective detection of [chemical warfare agents](#) and for monitoring their penetration inside a protective layer.

"These [smart textiles](#) adsorbed almost 7g of CWA surrogate/its [detoxification](#) products per gram of Cu. The superior performance was linked to the high dispersion of the MOF crystals on the fibers, and a specific texture promoting the availability of the active copper centers," said Bandosz, who is seeking funding for additional research.

Provided by City College of New York

Citation: Researchers produce smart fabric to neutralize nerve gas (2017, August 16) retrieved 10 April 2024 from <https://phys.org/news/2017-08-smart-fabric-neutralize-nerve-gas.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.