

# New defense for terrorism

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The recent terrorism attacks in London and Egypt underscore the need to protect the health and safety of our society. To thwart future attacks, Joe Wang, director of the Center for Biosensors and Bioelectronics at the Biodesign Institute at ASU, is developing “lab-on-a-chip” systems to detect explosives and chemical warfare agents.

“The long-term goal of our research is the creation of a hand-held, field-deployable microanalyzer that can provide for the early and timely detection of explosives and chemical warfare agents,” says Wang, who also is an ASU professor of chemistry and a professor of chemical and materials engineering.

Wang’s group already has developed a prototype device to detect TNT and nerve agents.

The self-contained apparatus is based on a capillary-electrophoresis electrochemical detection method.

Wang’s technology relies on the ability to detect minute chemical changes in explosives when a voltage is applied onto the sensing electrode.

A working electrode produces electrons that are taken up by the explosives, reducing the current over time.

The amount of reduction current signal is proportional to the amount of explosives in the sample and is extremely sensitive, being able to

measure down to one part per billion.

In addition, the method works without any external pumps or valves, and the entire detection process can be completed in less than a minute.

ASU researchers presented their findings at the 230th national meeting of the American Chemical Society.

Source: Arizona State University

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