

MEDIA RELEASE

NEWS FROM THE UNIVERSITY OF TASMANIA

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ATTENTION: Chiefs of Staff, News Directors

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New Technology will help catch terrorist bombers

An Australian University has made a highly significant scientific development which promises to assist police to more efficiently apprehend terrorists responsible for bomb blasts using homemade explosives.

In a world first, the University of Tasmania has developed a portable explosives “fingerprint” device which can process and analyse the complex chemical residues from homemade bombs in minutes.

The briefcase size instrument, which works on a high voltage from a battery, allows scientists to separate and identify the individual chemicals left in complex residues after a bomb blast. These residues form a “fingerprint” which is used to identify the explosive used.

The instrument was developed by a team of ten scientists in the extensive laboratories of the Australian Centre for Research On Separation Science (ACROSS), under funding from the Research Support for Counter Terrorism Programme through the Department of Prime Minister and Cabinet, Australia. This device will add an important new dimension to forensic investigations and counter-terrorism measures.

Research leader, Dr Greg Dicinoski, said the “ACROSS Portable Explosive Fingerprinter” device could give counter-terrorism authorities three distinct advantages:

- It is portable and can be taken onto most bomb sites
- Samples can be analysed on-site from miniscule levels of chemical residues
- Investigators will have the results in minutes and can start pursuing leads immediately

“This is a very exciting breakthrough for forensic science, and the possibilities are enormous” Dr Dicinoski said.

“After a terrorist bombing, it can often take investigators considerable time using laboratory tests to find exactly the kind of chemicals used to create the bomb.

With the new portable technology it will be possible to identify the exact homemade explosive used within minutes, thus allowing investigators to trace large purchases of the particular chemicals involved.”

The portable analyser employs a narrow capillary (75 micro-metres wide – about the diameter of 3 average human hairs). Small amounts of samples for analysis are transported through these capillaries whereby chemical separation takes place under the action of a large potential difference (approximately 25,000 V). This process is known as capillary electrophoresis.

Conventional chemical analysis uses laboratory glassware and large bench-top instruments. Transfer between different steps in the analysis usually involves manual processes.

In the portable instrumental approach, all of the steps in the analysis are integrated and the whole process takes place inside the capillary, under the control of a computer.

Dr Dicoski estimated that the average analysis time using the new technology is up to 10 times faster than that which can be achieved with a conventional bench-top instrument. The ability to perform the analysis in the field also reduces the time required to transfer results to investigators.

“The portable system involves working with small volumes, thereby reducing the consumption of samples and reducing waste. It also provides the ability to measure very low levels of the key components in the bomb residues. This makes it easier to analyse the chemical residues and to determine with confidence the composition of homemade inorganic explosive devices” he said.

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