

SHINING A NEW LIGHT ON CRIME SCENES

IMPACT!

Engineering and Physical Sciences Research Council | Case study 08



VITAL CLUES

New technology will quickly and efficiently locate tiny specks of body fluid at crime scenes.

Fingerprinting and DNA profiling are the cornerstones of crime detection. Now new techniques, pioneered by EPSRC-supported researchers, are set to take these methods to a whole new level.

The Light It Up project has developed a spray that will illuminate the tiniest DNA sample on a piece of clothing or carpet, and extract new chemical evidence from fingerprints.

IMPACT ON CRIME INVESTIGATION

- New technology will allow investigators to quickly and efficiently locate tiny specks of body fluid at crime scenes. This will provide more samples for DNA analysis.
- Investigators will be able to gather 'lifestyle intelligence' from fingerprints – such as whether the suspect is a smoker, drug user or has handled explosives.

Turning crime fiction into crime reality

"We spray our antibody solution onto the item, let it bind, remove unbound particles and then shine a light on it. We can see exactly what body fluids are present and exactly where they are. That is just not possible with the techniques available at the moment," says Dr Sue Jickells.

It reads like a scene from a TV crime show – and until now that's exactly what it was. But research teams, at the University of East Anglia (led by Professor David Russell and Dr Jickells) and King's College London (led by Dr Barbara Daniel), have turned crime fiction into crime reality. The Light It Up project has developed a technique that can quickly locate and identify minute specks of body fluid at a crime scene, such as saliva, blood and semen. The spray solution quite literally 'lights up' the evidence, giving each sample a fluorescent glow under a forensic light.

The project has also adapted the technique to extract more information, known as 'lifestyle intelligence', from fingerprints – information such as whether the suspect is a smoker or a cocaine user or if they have handled explosives.

"A fingerprint is only useful when it is matched to one on a database. If someone has never committed a crime or never been caught before they won't have had their prints taken. Without that match you have a dead end," says Professor Russell.

"What we decided to do was try to get more information, more chemical information, from a fingerprint to help police narrow down the list of suspects."

The techniques offer huge advantages to investigators. Not only will they be able to gather more information from crime scenes, and from evidence sent to the laboratory for analysis, but they will be able to do it quickly and efficiently.

Both aspects of the Light It Up project have been carried out in collaboration with the Home Office Scientific Development Branch, the Forensic Explosives Laboratory (DSTL), the Forensic Science Service and Foster and Freeman Ltd, a manufacturer of forensic light sources.

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